



**QNAP**

# TS-x73A

TS-473A

TS-673A

TS-873A

用户指南

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# 1. 前言





## 关于本指南

本指南提供有关 QNAP TS-x73A NAS 的信息以及有关硬件安装的分步说明。此外，还提供了有关基本操作和故障排除信息的说明。

## 受众

本文档的目标读者为用户和存储管理员。本指南假定用户已对存储和备份概念有基本了解。

## 文档约定

符号	描述
	注释，提供默认配置设置和其他补充信息。
	重要注释，提供有关所需配置设置的信息以及其他关键信息。
	提示，提供有关执行任务或配置设置的建议或备选方法。
	警告，提供警告信息，如果忽略此信息，可能会导致潜在损失、伤害甚至死亡。

## 2. 产品概述

本章提供有关 QNAP TS-x73A NAS 的基本信息。

### 关于 TS-x73A

TS-x73A 是一款高性能、低能耗的 NAS 解决方案，配有 AMD Ryzen™ Embedded V1500B 四核处理器、AES-NI 硬件加密引擎和高达 64 GB 的内存。受益于配备的可热插拔硬盘、M.2 NVMe SSD 插槽和双 PCIe 扩展插槽，TS-x73A 还可以根据您的需求进行扩展。您还可以在 QTS 和 QuTS hero 之间切换操作系统。

### 硬件规格



#### 警告

- 如果您的 QNAP 产品有硬件方面的缺陷，请将产品退回 QNAP 或 QNAP 授权的服务中心进行维修或更换。您本人或未经授权的第三方对产品进行的任何维修或维护流程均会使保修失效。
- 对于因未经授权进行的修改和安装不受支持的第三方应用程序而造成的任何损坏或数据丢失，QNAP 概不负责。
- 有关详细信息，请参见 [QNAP 保修条款和条件](#)。





#### 提示

型号规格如有更改，恕不另行通知。要查看最新规格，请转到 <https://www.qnap.com>。

订购部件号	硬盘架	内存	电源
TS-473A-8G	4	8 GB	单个
TS-673A-8G	6	8 GB	单个
TS-873A-8G	8	8 GB	单个

组件	TS-473A	TS-673A	TS-873A
处理器	AMD® Ryzen™ Embedded V1500B		
CPU	AMD® Ryzen™ Embedded V1500B		
频率	4 核/8 线程 2.2 GHz		
架构	x86 64 位		
加密引擎	AES-NI		
内存			
预安装内存	8 GB RAM: 1 x 8 GB DDR4 无 ECC 功能 SODIMM		

组件	TS-473A	TS-673A	TS-873A
内存插槽	2 x SODIMM DDR4   <b>重要</b> <ul style="list-style-type: none"> <li>请仅使用 QNAP 内存模块，以保证系统性能和稳定性。对于有多个内存插槽的 NAS 设备，请使用规格相同的 QNAP 模块。</li> <li>使用不受支持的模块可能导致性能下降、引发错误或使操作系统无法启动。</li> </ul>  <b>注</b> 此设备支持 ECC 内存模块。		
最大内存	64 GB (2 x 32 GB)		
闪存	5 GB (双重引导操作系统保护)		
存储			
硬盘架	4 x 3.5 英寸 SATA 6 Gbps 硬盘架	6 x 3.5 英寸 SATA 6 Gbps 硬盘架	8 x 3.5 英寸 SATA 6 Gbps 硬盘架
	 <b>提示</b> 硬盘架向后兼容 SATA 3 Gbps 硬盘。		
硬盘兼容性	3.5 英寸硬盘架： <ul style="list-style-type: none"> <li>3.5 英寸 SATA 机械硬盘</li> <li>2.5 英寸 SATA 机械硬盘</li> <li>2.5 英寸 SATA 固态硬盘</li> </ul>		
M.2 SSD 插槽	2 x PCIe Gen 3 x1 NVMe		
M.2 SSD 外形规格	2280		
SSD 缓存加速支持	3.5 英寸硬盘架：1 至 4	3.5 英寸硬盘架：1 至 6	3.5 英寸硬盘架：1 至 8
热插拔	本设备支持热插拔硬盘，以下各项除外： M.2 SSD		
网络			
2.5 Gb 以太网端口	2 x 2.5 GbE RJ45   <b>注</b> 2.5 Gb 以太网端口可提供 3 种网络连接速度：2.5G、1G 和 100M。		
网络唤醒	是 (2.5 GbE RJ45)		
外部 I/O 端口和扩展插槽			
PCIe 插槽	2 x PCIe 3.0 x4		

组件	TS-473A	TS-673A	TS-873A
USB 端口	正面： 1 x USB 3.2 Gen 2 (10 Gbps) A 型   <b>注</b> 此 USB 端口支持一键复制。  背面： <ul style="list-style-type: none"> <li>• 2 x USB 3.2 Gen 2 (10 Gbps) A 型</li> <li>• 1 x USB 3.2 Gen 1 (5 Gbps) C 型</li> </ul>		
接口			
按钮	<ul style="list-style-type: none"> <li>• 电源</li> <li>• USB 一键复制</li> <li>• 重置</li> </ul>		
尺寸			
外形规格	立式		
尺寸（高 x 宽 x 深）	188.2 x 199.3 x 280.8 mm （7.41 x 7.85 x 11.05 英寸）	188.2 x 264.3 x 280.8 mm （7.41 x 10.4 x 11.05 英寸）	188.2 x 329.3 x 280.8 mm （7.41 x 12.96 x 11.05 英寸）
净重	5.03 kg（11.09 磅）	5.78 kg（12.74 磅）	6.76 kg（14.90 磅）
其他			
电源单元	250W, 100-240V AC, 50/60Hz		
系统电池	CR2032 锂电池（3V, 225 mAh）		
噪声声级	21.4 dB(A)	20.3 dB(A)	23.0 dB(A)
	 <b>注</b> 噪声声级在距 NAS 一米以内的旁观者位置测得。测试 NAS 安装了最大数量的硬盘以低速运行。		
风扇	<ul style="list-style-type: none"> <li>• 系统：1 x 120 mm, 12V DC 风扇</li> <li>• CPU：1 个 60 mm 风扇</li> </ul>	<ul style="list-style-type: none"> <li>• 系统：2 x 92 mm, 12V DC 风扇</li> <li>• CPU：1 个 60 mm 风扇</li> </ul>	<ul style="list-style-type: none"> <li>• 系统：2 x 120 mm, 12V DC 风扇</li> <li>• CPU：1 个 60 mm 风扇</li> </ul>
工作温度	0°C 至 40°C（32 至 104°F）		
相对湿度	<ul style="list-style-type: none"> <li>• 无冷凝相对湿度：5% 至 95%</li> <li>• 湿球温度：27°C (80.6°F)</li> </ul>		
安全锁孔	Kensington 安全锁孔		



#### 提示

有关兼容的硬盘型号和扩展卡的列表，请转到 <https://www.qnap.com/compatibility>。

## 包装内容

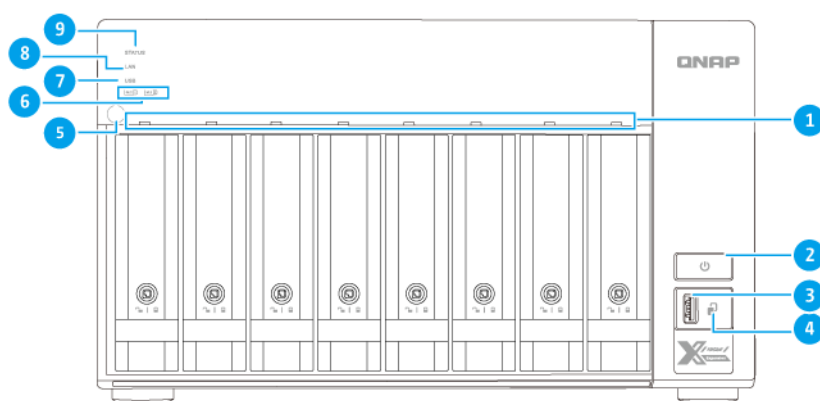
项目	数量
TS-x73A NAS	1
电源线	1

项目	数量
以太网线	1 Cat5e
适用于 3.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>• TS-473A: 12</li> <li>• TS-673A-4G: 18</li> <li>• TS-873A: 24</li> </ul>
适用于 2.5 英寸硬盘的螺丝	<ul style="list-style-type: none"> <li>• TS-473A: 12</li> <li>• TS-673A: 18</li> <li>• TS-873A: 24</li> </ul>
硬盘托盘钥匙	2
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快速安装指南 (QIG)	1

## 组件

### 前面板

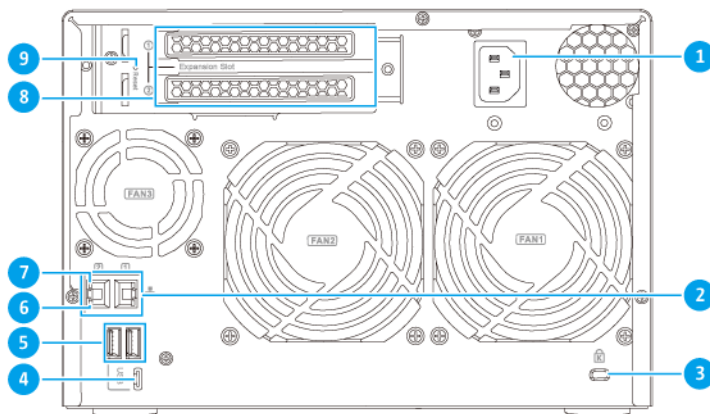
#### TS-x73A




编号	组件	编号	组件
1	硬盘 LED	6	M.2 SSD LED
2	电源按钮	7	USB LED
3	USB 3.2 Gen 2 一键复制 A 型端口	8	LAN LED
4	USB 一键复制按钮	9	状态 LED
5	红外传感器	-	-

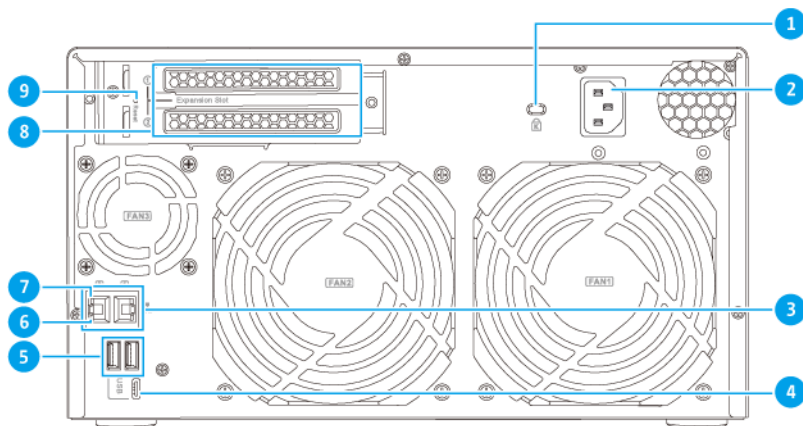


## 后面板




## TS-473A/TS-673A

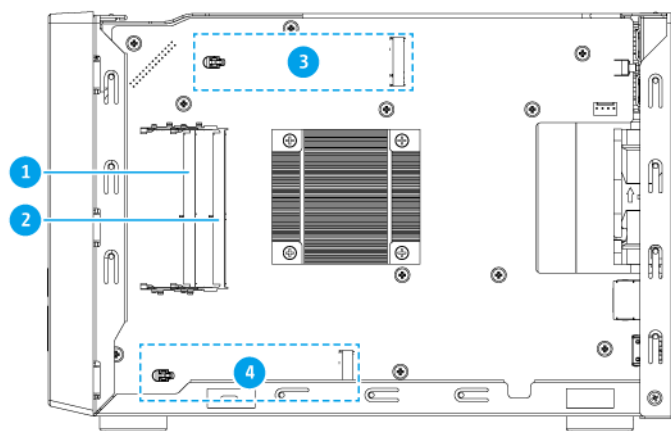
编号	组件		组件
1	电源输入	6	2.5 Gb 以太网活动 LED
2	2.5 Gb 以太网端口 (RJ45)	7	2.5 Gb 以太网速度 LED
	 <b>注</b> 这些千兆位以太网端口支持网络唤醒配置。		
3	Kensington 安全锁孔	8	PCIe 全高盖板
4	USB 3.2 Gen 1 C 型端口	9	重置按钮
5	USB 3.2 Gen 2 A 型端口	-	-



### TS-873A

编号	组件		组件
1	Kensington 安全锁孔	6	2.5 Gb 以太网活动 LED
2	电源输入	7	2.5 Gb 以太网速度 LED
3	2.5 Gb 以太网端口 (RJ45)	8	PCIe 全高盖板
	 <b>注</b> 这些千兆位以太网端口支持网络唤醒配置。		
4	USB 3.2 Gen 1 C 型端口	9	重置按钮
5	USB 3.2 Gen 2 A 型端口	-	-

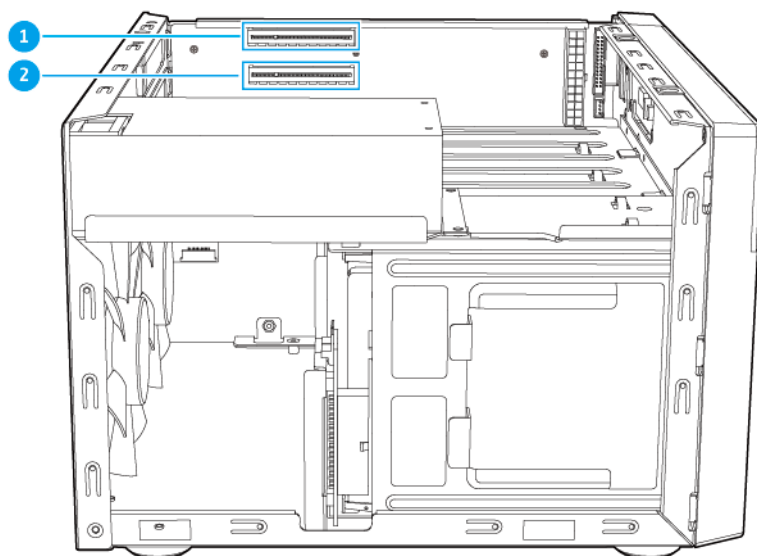
## 右面板



注  
图像不含机箱。

编号	组件	编号	组件
1	内存插槽 2	3	M.2 SSD 插槽 1
2	内存插槽 1	4	M.2 SSD 插槽 2

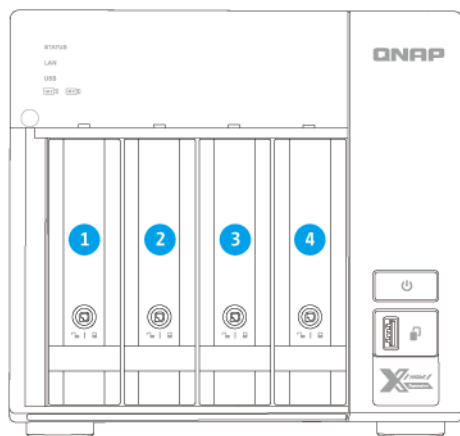
## 左面板



注  
图像不含机箱。

编号	组件	编号	组件
1	PCIe 插槽 1 (PCIe 3.0 x4)	2	PCIe 插槽 2 (PCIe 3.0 x4)

## 硬盘编号



### TS-473A



### TS-673A



## TS-873A

### 安全信息

以下说明有助于确保个人安全和环境安全。在执行任何操作之前，请仔细阅读这些说明。

#### 一般说明

- 设备应存放在通过器具、锁和钥匙或任何安保措施限制进入的安全场所。
- 只有经过授权并掌握技能的合格人员才能实际接触设备，相关人员需了解所有限制措施、安全预防措施和安装维护流程。
- 为避免潜在伤害或组件的损坏，请务必等硬盘和其他内部系统组件冷却后再触碰。
- 请执行静电放电 (ESD) 规程，以避免可能的人员受伤或组件受损。

#### 电源

- 为降低失火或触电风险，请确保只将电源线连接到接地良好的电源插座。



配备冗余电源的设备可能有一条或多条电源单元 (PSU) 线。为避免受到严重伤害，安装或更换系统组件前，必须由经培训的维修技师从设备拔下所有 PSU 线。

#### 系统电池

- 为避免潜在的电池爆炸、导致人员受伤或组件受损，请确保使用同型电池更换现有电池。
- 请按当地法规或电池制造商的指示正确处置使用过的电池。

## 运动的部件

•



**转动的风扇叶片：** 在设备连接到电源时，使您的身体各部位远离正在转动的风扇叶片。

•



**运动的组件：** 使您的身体各部位远离正在运动的其他组件。

## 安装要求

类别	项目
环境	<ul style="list-style-type: none"> <li>• 室温：0°C 至 40°C（32 至 104°F）</li> <li>• 无冷凝相对湿度：5% 至 95%</li> <li>• 湿球温度：27°C (80.6°F)</li> <li>• 平坦的防静电表面，无直射阳光、液体或化学药剂</li> </ul>
硬件和外围设备	<ul style="list-style-type: none"> <li>• 存储硬盘 有关兼容硬盘的详细信息，请转到 <a href="https://www.qnap.com/compatibility/">https://www.qnap.com/compatibility/</a>。</li> <li>• 网线</li> </ul>
工具	<ul style="list-style-type: none"> <li>• 1 号或 2 号十字螺丝刀</li> <li>• 防静电腕带</li> </ul>

## 设置 NAS

1. 将 NAS 设备置于符合要求的环境中。  
有关详细信息，请参见 [安装要求](#)。
2. 安装硬盘。  
有关详细信息，请参见以下主题：
  - [在 3.5 英寸托盘上安装 3.5 英寸硬盘](#)
  - [在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘](#)
  - [安装 M.2 固态硬盘](#)
3. 可选: 安装扩展卡。
4. 连接电源线和所有适用的线缆。
5. 启动 NAS 电源。
6. 安装 QTS。  
有关详细信息，请参见 [QTS 安装](#)。
7. 登录操作系统。



## 3. 安装和配置

本章提供了具体的硬件和固件安装与配置步骤。

### 硬件安装

本节提供有关安装硬盘、内存模块和扩展卡的信息。

### 硬盘安装

TS-x73A 兼容 3.5 英寸和 2.5 英寸硬盘以及 2.5 英寸固态硬盘和 M.2 固态硬盘。

#### 在 3.5 英寸托盘上安装 3.5 英寸硬盘



#### 警告

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

•



**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

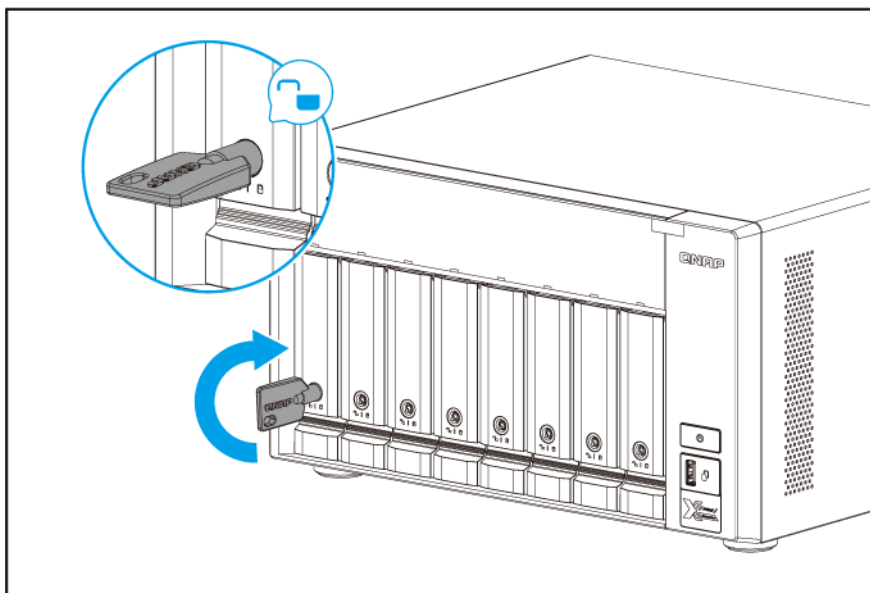
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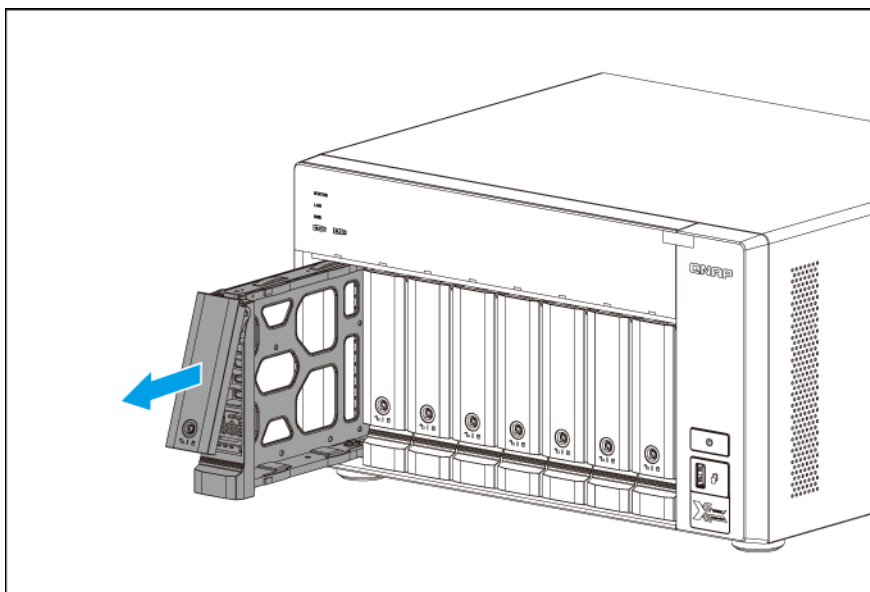
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 取下硬盘托盘。
  - a. 可选: 解除对托盘的锁定。





- b. 拉动手柄以松开托盘。
- c. 拉出托盘。

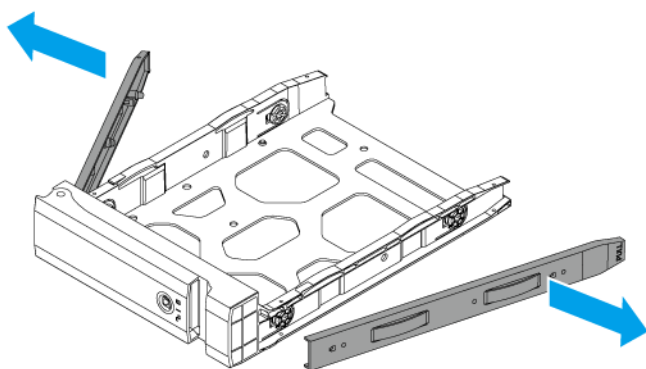


**注**  
预装硬盘托盘未锁定。

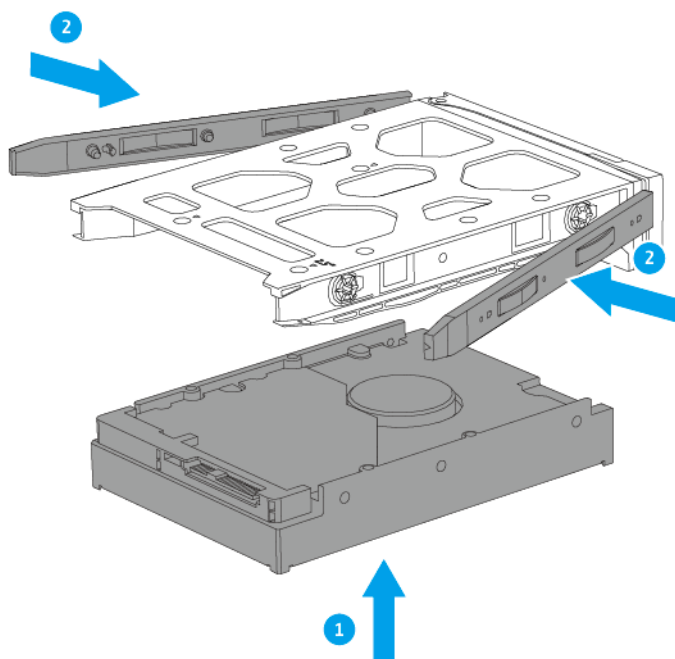


**重要**  
请确保将硬盘托盘钥匙存放在安全的地方。

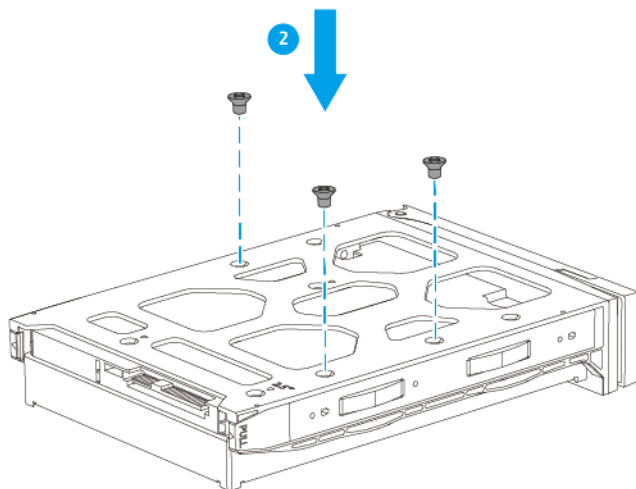
- 3. 将硬盘安装到托盘上。
  - a. 取下硬盘托盘两侧的固定面板。



- b. 将硬盘放在托盘上，使硬盘两侧的孔与托盘两侧的孔对齐。
- c. 装上固定面板，将硬盘锁定在托盘上。

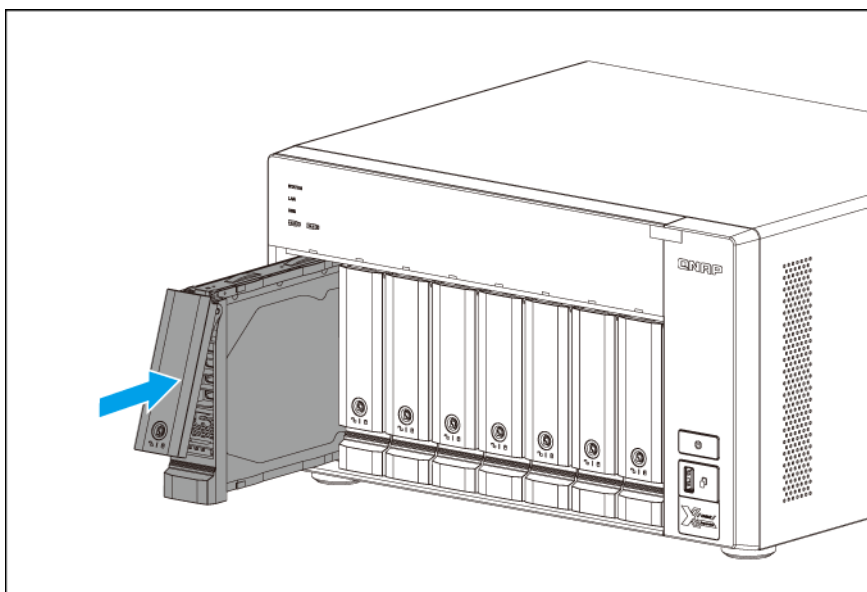


- d. 可选: 装上螺丝，进一步固定硬盘。

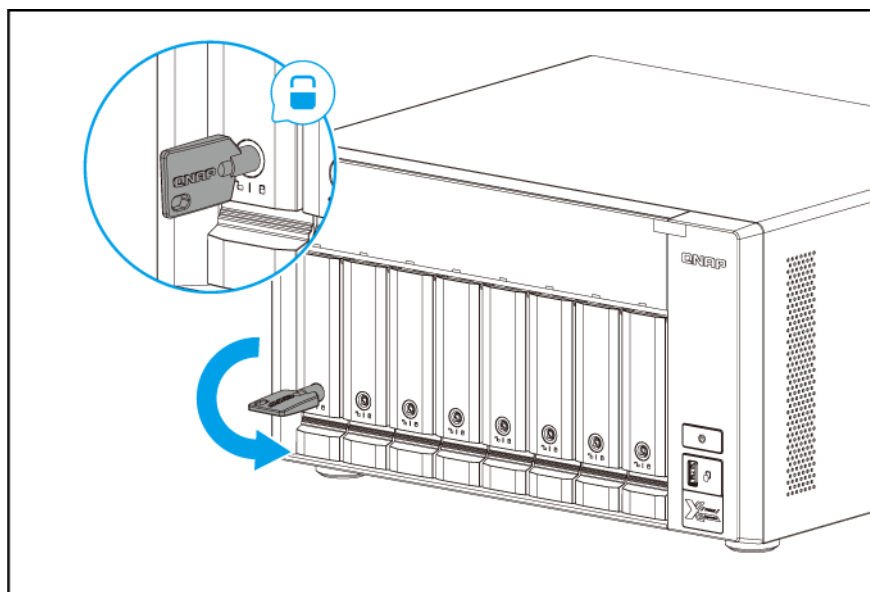


**4. 将托盘装入硬盘架。**

- a. 将托盘插入硬盘架。**



- b. 推动手柄。**
- c. 锁住托盘。**



5. 启动 NAS 电源。

### 在 3.5 英寸托盘上安装 2.5 英寸硬盘或固态硬盘



#### 警告

- 安装硬盘将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

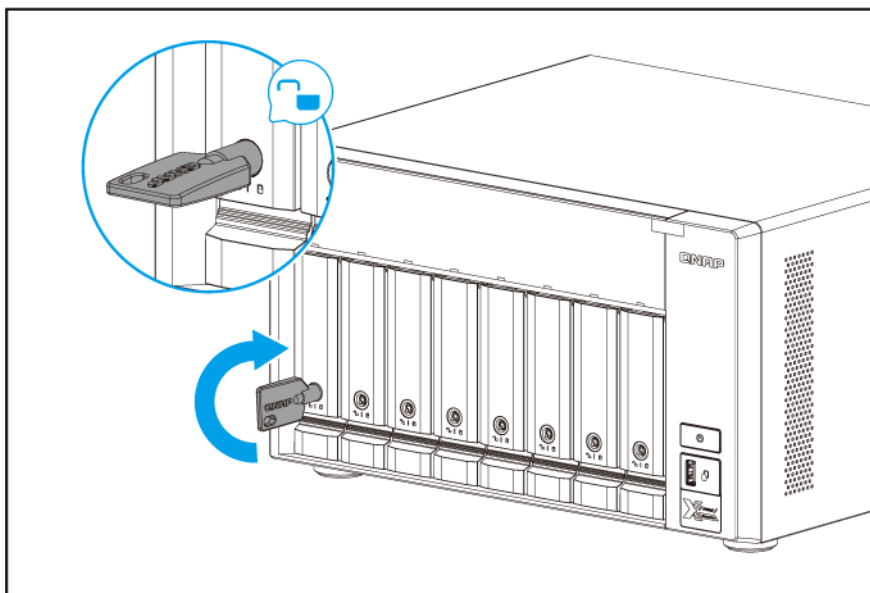


**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

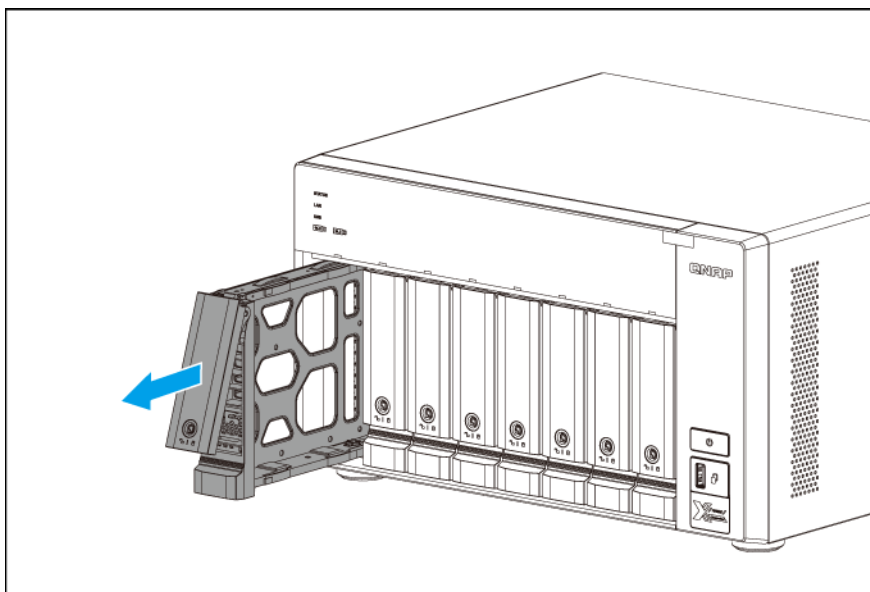


**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

1. 关闭 NAS 电源。
2. 取下硬盘托盘。
  - a. 可选：解除对托盘的锁定。



- b. 拉动手柄以松开托盘。
- c. 拉出托盘。

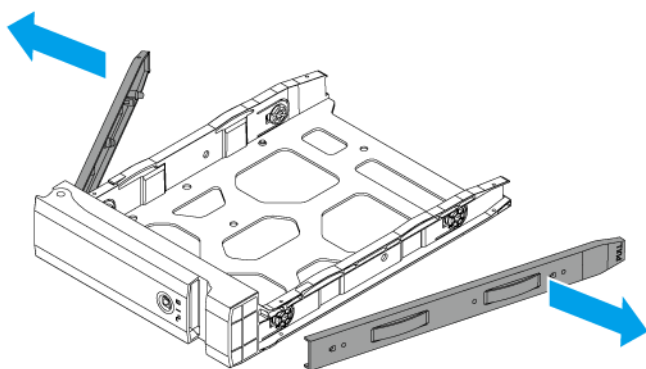


**注**  
预装硬盘托盘未锁定。

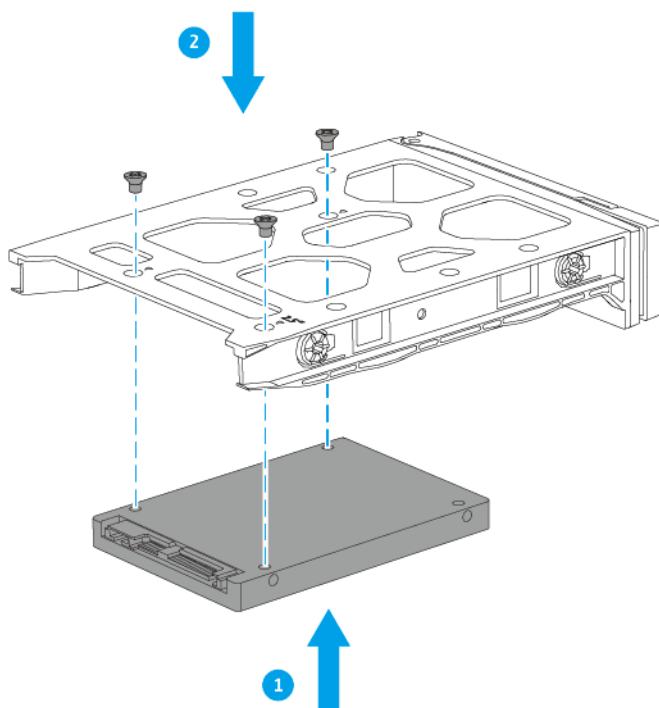


**重要**  
请确保将硬盘托盘钥匙存放在安全的地方。

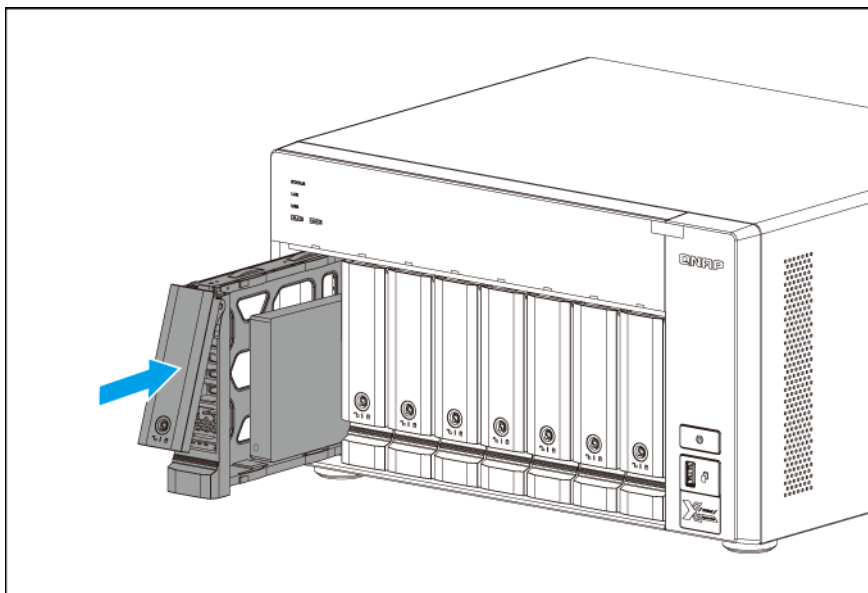
- 3. 将硬盘安装到托盘上。
  - a. 取下硬盘托盘右侧的固定面板。



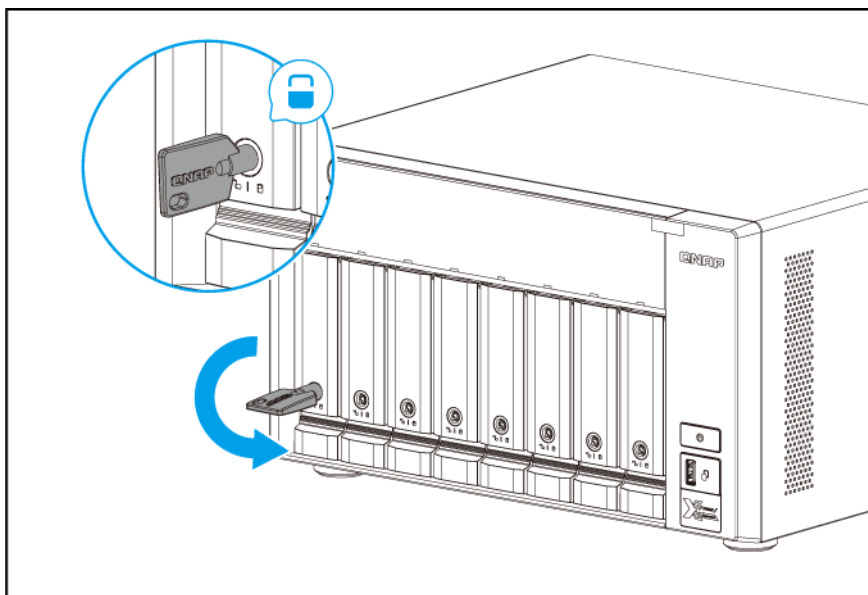
- b. 将硬盘放在托盘上，使硬盘底部的孔与托盘底部的孔对齐。
- c. 安装螺丝。



- 4. 将托盘装入硬盘架。
  - a. 将托盘插入硬盘架。



- b. 推动手柄。
- c. 锁住托盘。



## 5. 启动 NAS 电源。

### 安装 M.2 固态硬盘

该设备的右面板上有两个 M.2 SSD 插槽。

有关详细信息，请参见[右面板](#)。

有关兼容 M.2 SSD 的列表，请转到 <http://www.qnap.com/compatibility>。



### 警告

- 安装硬盘和安装 QTS 将删除硬盘上的所有数据。
- 请执行静电放电 (ESD) 规程，以避免组件损坏。



**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。



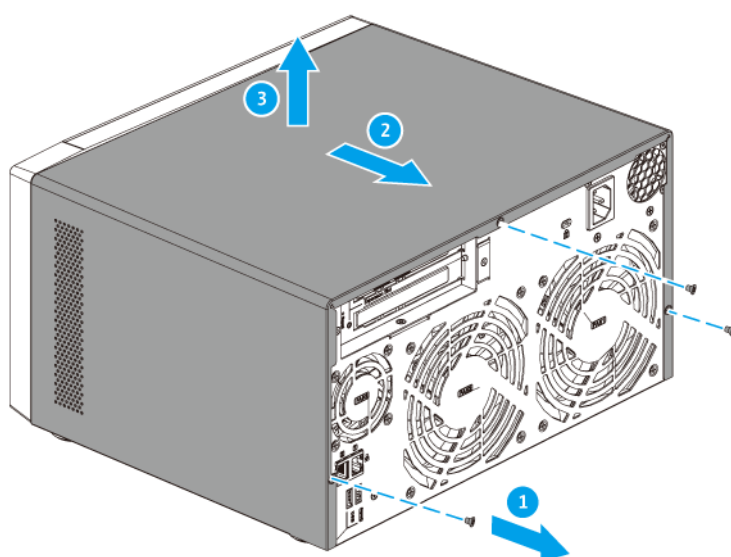
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。



### 注

- QNAP 建议在 M.2 SSD 控制器上安装散热片，以提高散热效果并确保性能稳定。
- 安装非 QNAP 出品的散热片前，请确保该散热片的尺寸和外形合适。

1. 关闭设备。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 松开螺丝。
  - b. 将盖板向后滑动。
  - c. 从设备上提起盖板。





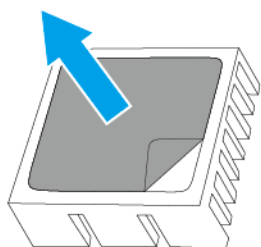
**5. 在 M.2 SSD 上安装散热片。**

- a. 在 M.2 SSD 上找到控制器。

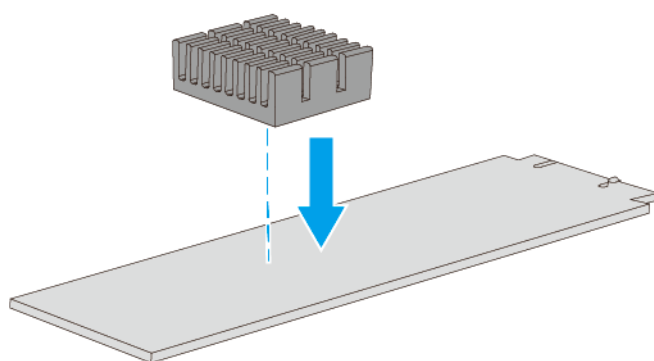


**注**  
控制器位置因 M.2 SSD 的型号和制造商而异。  
有关详细信息，请参阅文档或联系制造商。

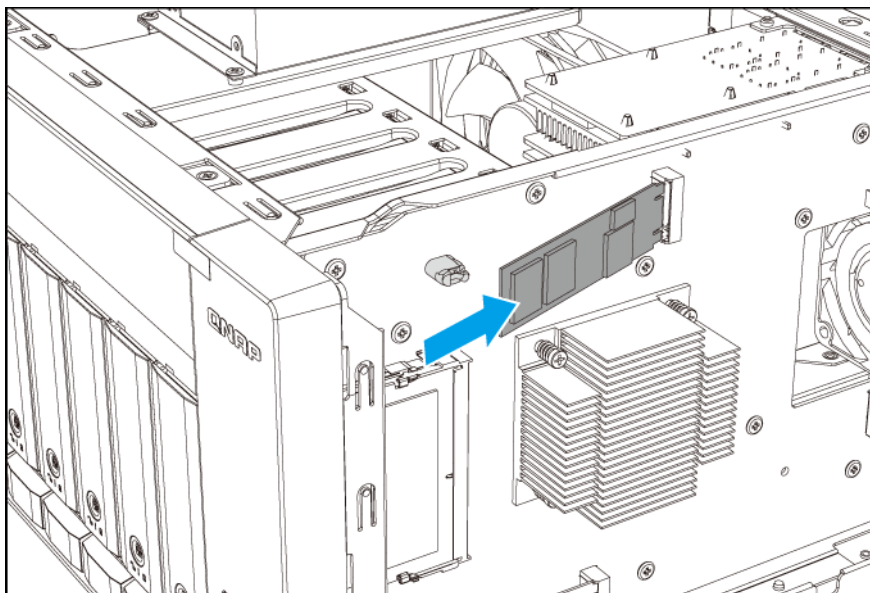
- b. 取下散热片的保护膜。



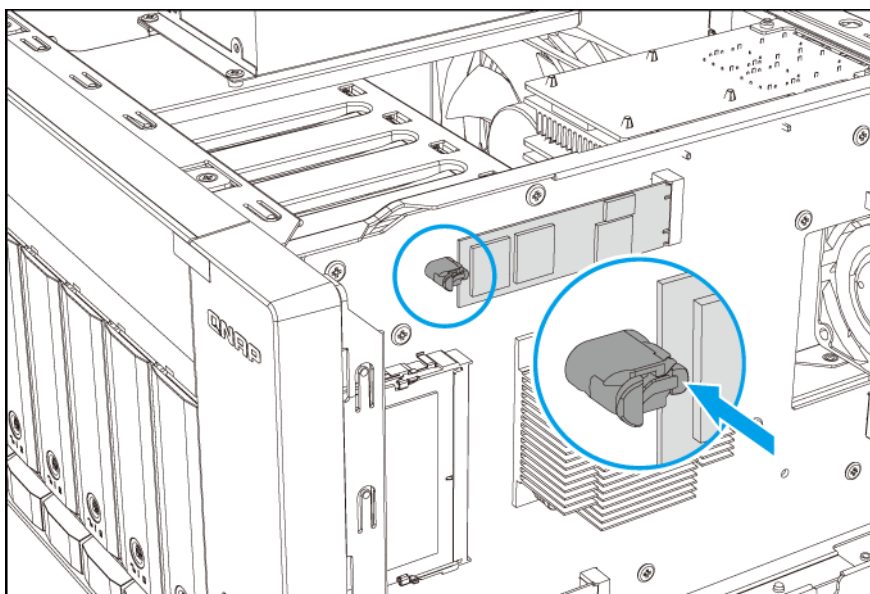
- c. 将散热片安装到控制器上。

**6. 安装 M.2 SSD。**

- a. 检查 M.2 SSD 连接器是否与插槽对齐。

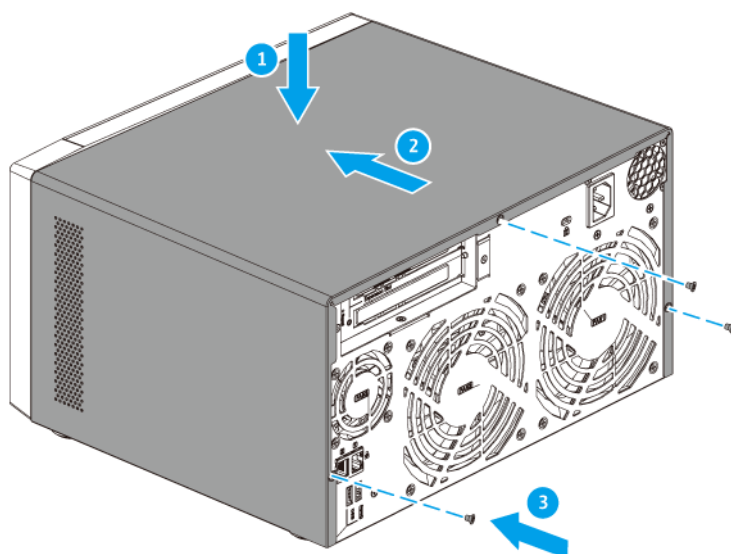


b. 小心地向下按压 M.2 SSD，直到固定扣将硬盘锁定到位。



## 7. 安装外壳盖。

- a. 将盖板放在设备上。
- b. 将盖板向前滑动。
- c. 拧紧螺丝。



8. 连接所有线缆和外接部件。
9. 将电源线连接到插座。
10. 启动设备。

## 安装扩展卡

### 在 TS-473A 上安装扩展卡

NAS 支持精选的扩展卡，其中一些需要 QNAP PCIe 支架。从公司网站购买的 QNAP 品牌扩展卡随附有适合所有 QNAP NAS 型号的支架。

有关兼容扩展卡的列表，请转到 <https://www.qnap.com/compatibility>



#### 警告

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**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

- 



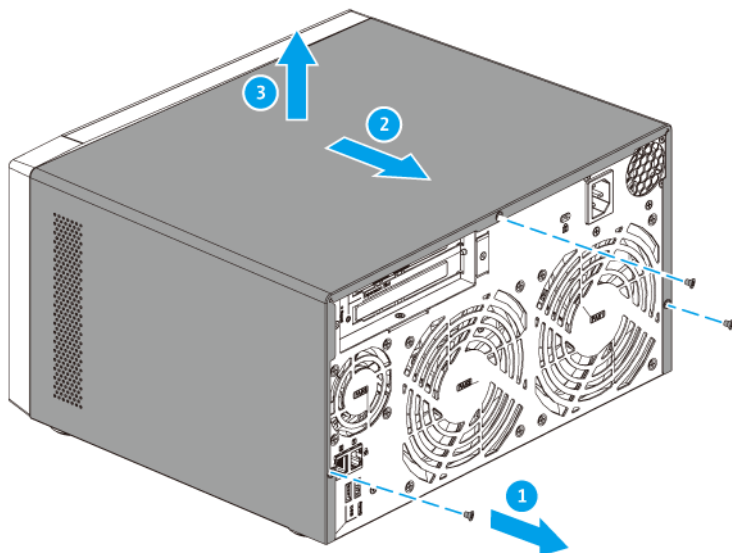
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

- 请执行静电放电 (ESD) 规程，以避免组件损坏。

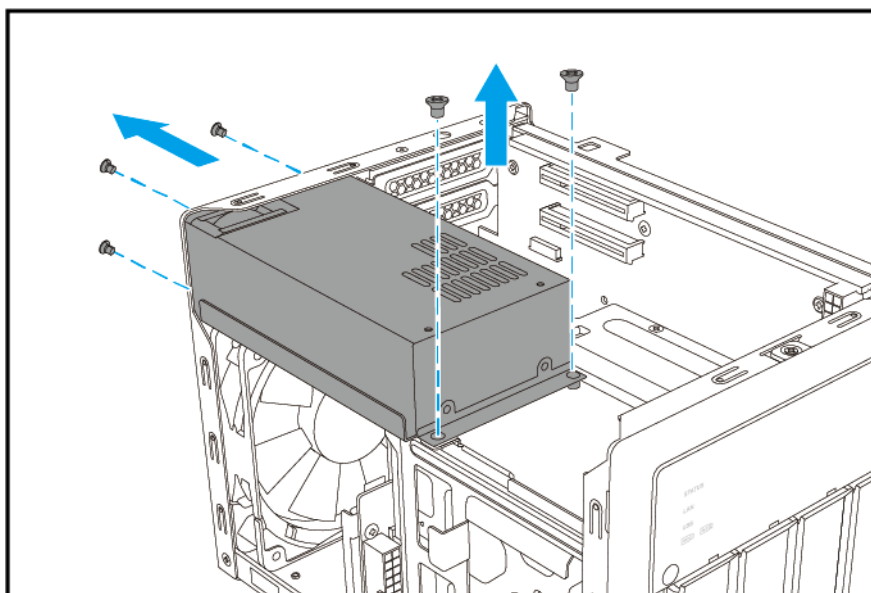
1. 关闭设备。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。

**4. 取下外壳盖。**

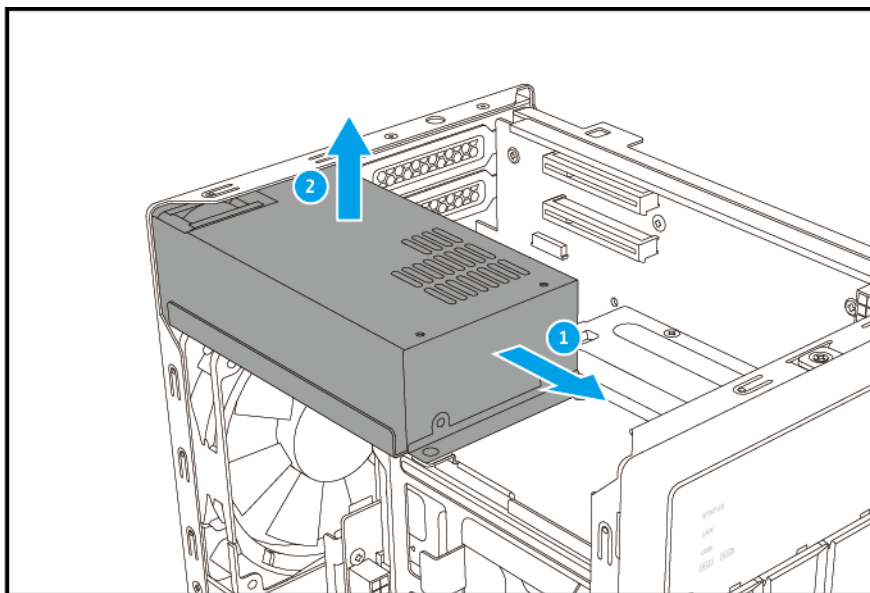
- a. 松开螺丝。
- b. 将盖板向后滑动。
- c. 从设备上提起盖板。

**5. 取下电源单元。**

- a. 拔下电源线。
- b. 卸下用于将电源单元固定到机箱的螺丝。

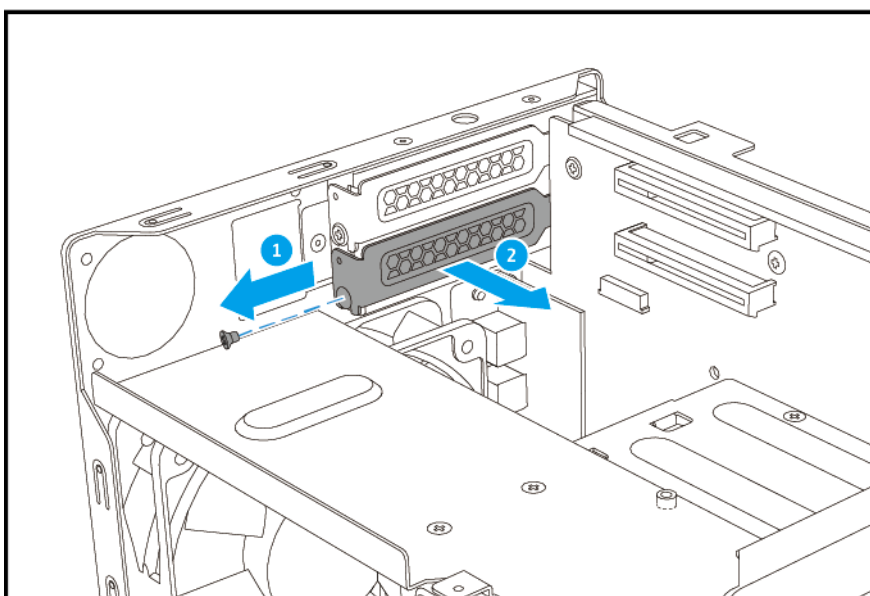


- c. 将电源单元从机箱上取下。



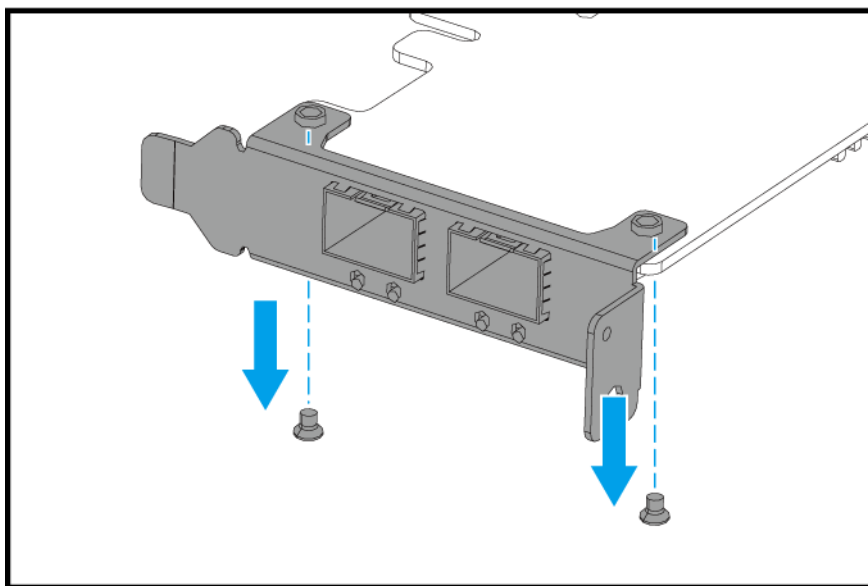
**6. 取下 PCIe 盖板。**

- a. 取下用于将盖板固定到支架的螺丝。
- b. 将盖板从插槽中拉出。

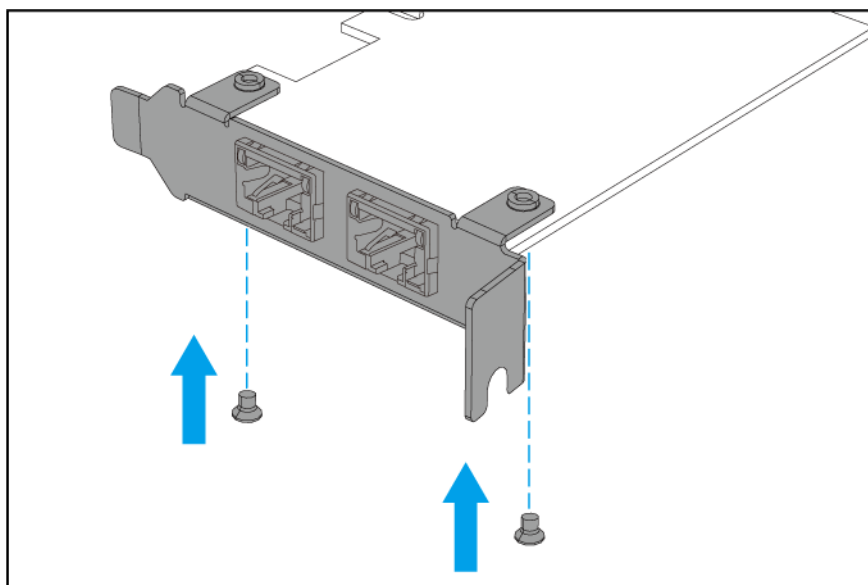


**7. 将 QNAP 支架安装到扩展卡上。**

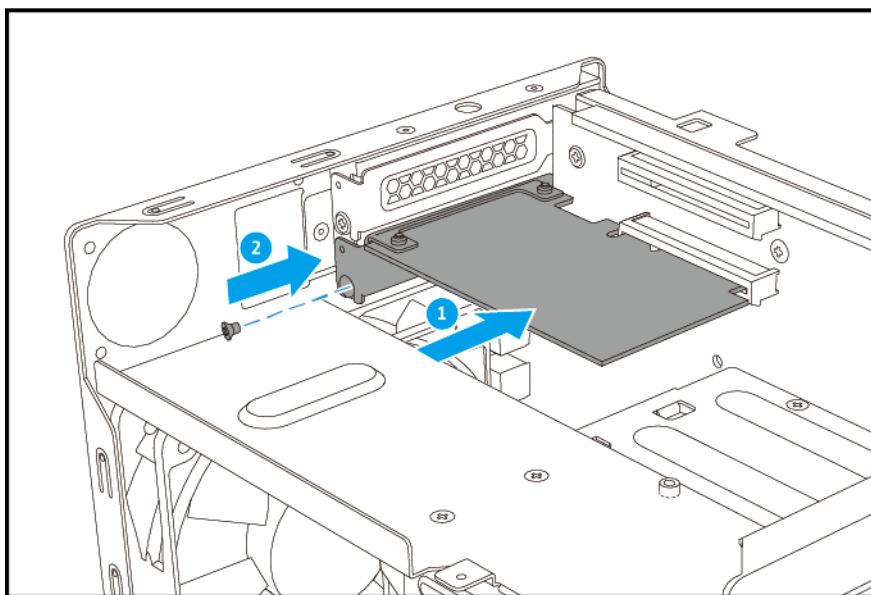
- a. 卸下现有支架的所有螺丝。



- b. 小心地从扩展卡取下支架。
- c. 使用相同的螺丝将 QNAP 支架安装到扩展卡上。

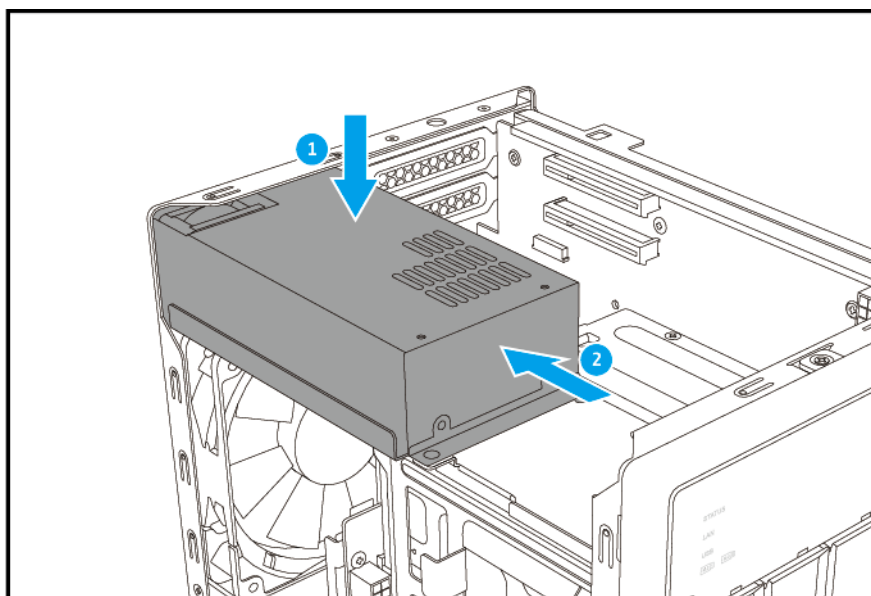


- d. 确认支架不会移动。
8. 安装扩展卡。
- a. 握住卡片边缘。
  - b. 将其插入插槽中。
  - c. 安装螺丝。

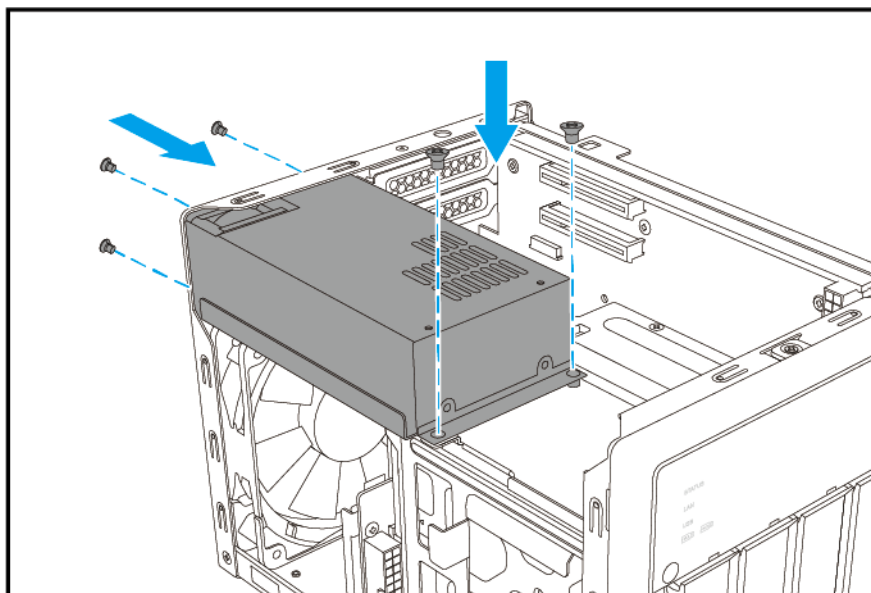


9. 安装电源单元。

- a. 将电源单元安装到机箱上。



- b. 装上用于将电源单元固定到机箱的螺丝。



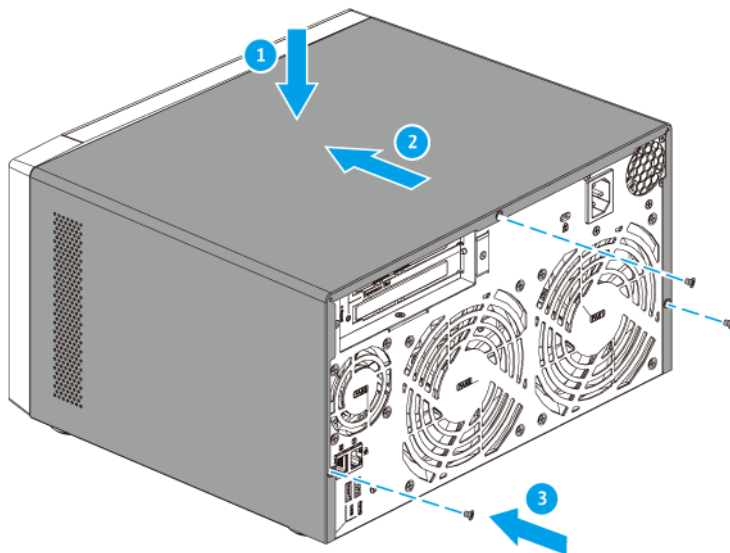
c. 连接电源线。

#### 10. 安装外壳盖。

a. 向下滑动盖板，使其完全触及机箱。

b. 将盖板向前滑动。

c. 拧紧螺丝。



11. 连接所有线缆和外接部件。

12. 将电源线连接到插座。

13. 启动设备。



## 在 TS-673A 或 TS-873A 上安装扩展卡

NAS 支持精选的扩展卡，其中一些需要 QNAP PCIe 支架。从公司网站购买的 QNAP 品牌扩展卡随附有适合所有 QNAP NAS 型号的支架。

有关兼容扩展卡的列表，请转到 <https://www.qnap.com/compatibility>



### 警告

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**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

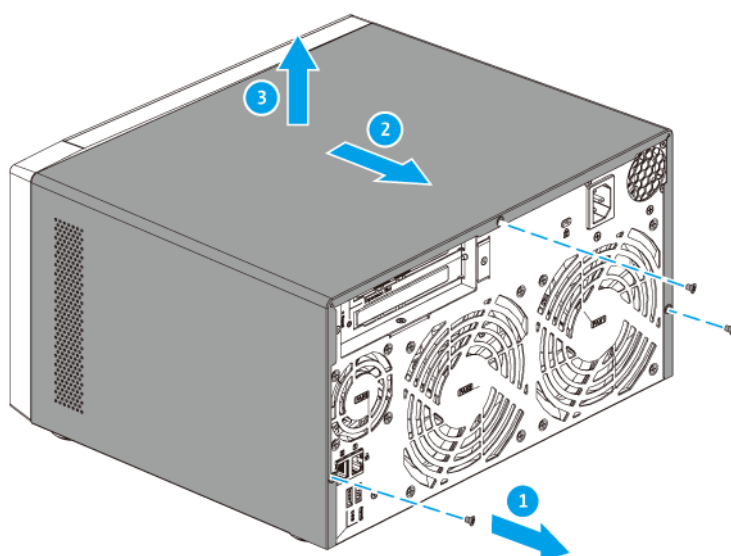
- 



**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

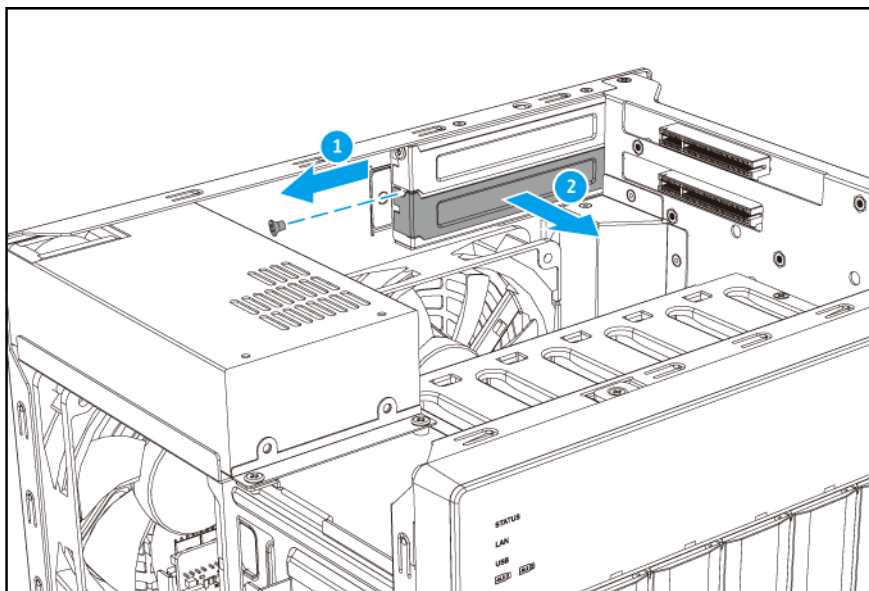
- 请执行静电放电 (ESD) 规程，以避免组件损坏。

1. 关闭设备。
2. 从插座上拔下电源线。
3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 松开螺丝。
  - b. 将盖板向后滑动。
  - c. 从设备上提起盖板。

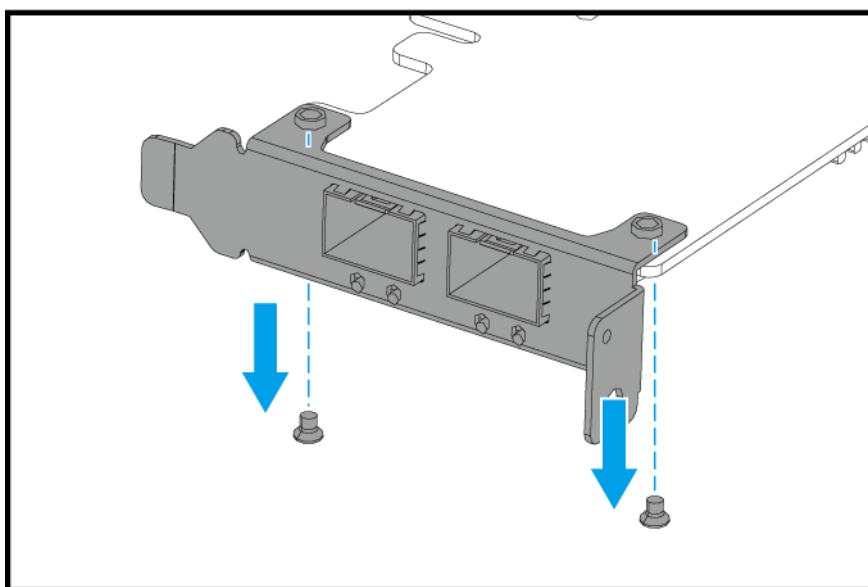


**5. 取下 PCIe 盖板。**

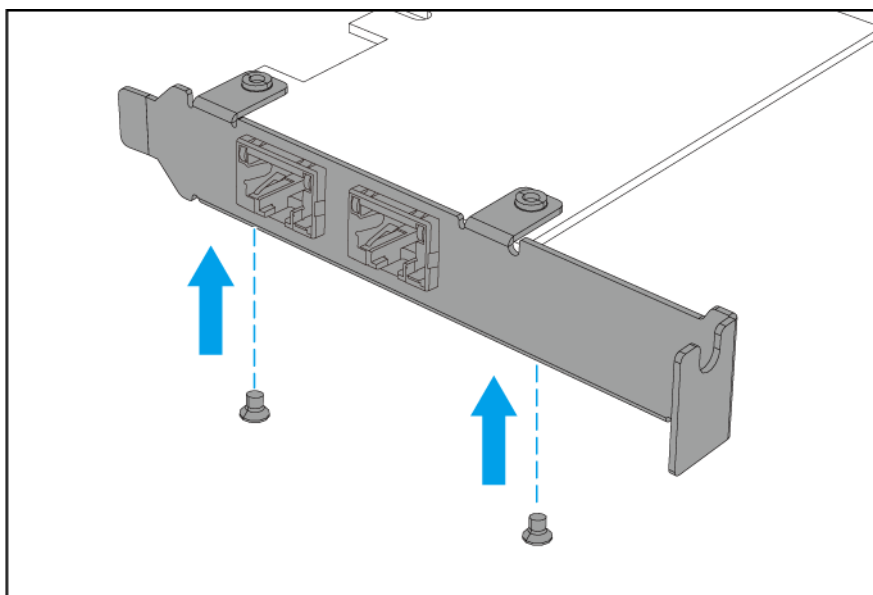
- a. 取下用于将盖板固定到支架的螺丝。
- b. 将盖板从插槽中拉出。

**6. 将 QNAP 支架安装到扩展卡上。**

- a. 卸下现有支架的所有螺丝。



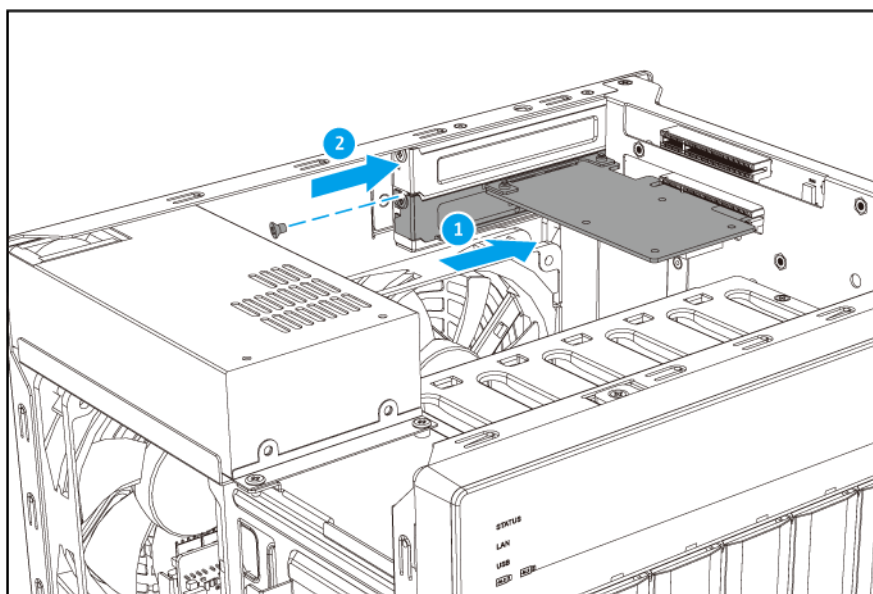
- b. 小心地从扩展卡取下支架。
- c. 使用相同的螺丝将 QNAP 支架安装到扩展卡上。



d. 确认支架不会移动。

## 7. 安装扩展卡。

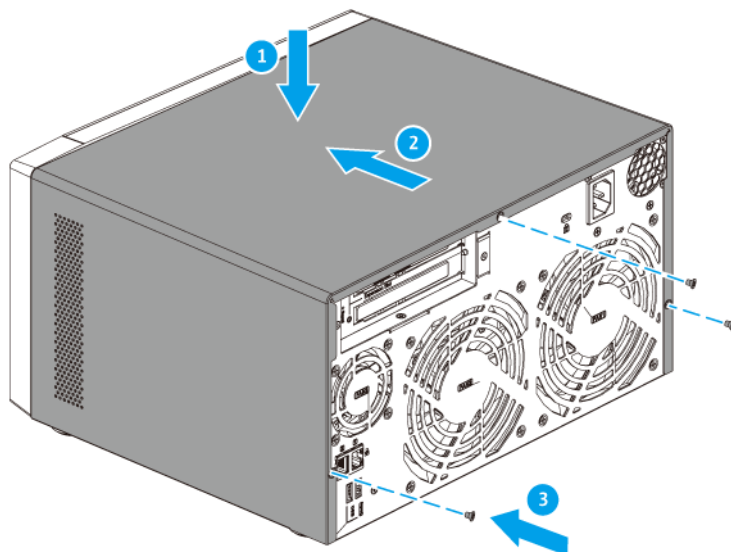
- a. 握住卡片边缘。
- b. 将其插入插槽中。
- c. 安装螺丝。



## 8. 安装外壳盖。

- a. 向下滑动盖板，使其完全触及机箱。
- b. 将盖板向前滑动。

c. 拧紧螺丝。



9. 连接所有线缆和外接部件。

10. 将电源线连接到插座。

11. 启动设备。

## 更换内存模块

TS-x73A 有两个内存插槽。您可以通过升级内存模块来增加 NAS 的内存容量。

请仅使用 QNAP 内存模块，以保证系统性能和稳定性。可以从授权经销商处购买 QNAP 内存模块。

有关插槽编号的详细信息，请参见右面板。



### 警告

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**转动的风扇叶片：**使您的双手和身体其他部位远离正在转动的风扇叶片。

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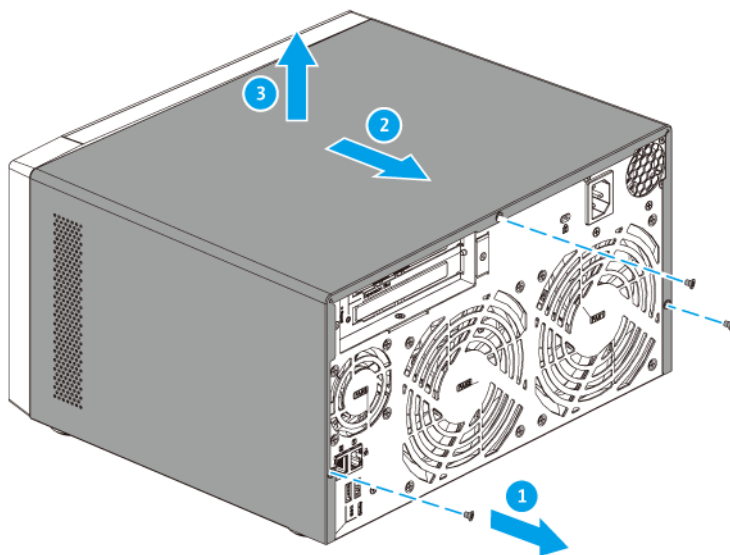
**其他运动的组件：**使您的双手和身体其他部位远离正在运动的其他组件。

- 请执行静电放电 (ESD) 规程，以避免组件损坏。

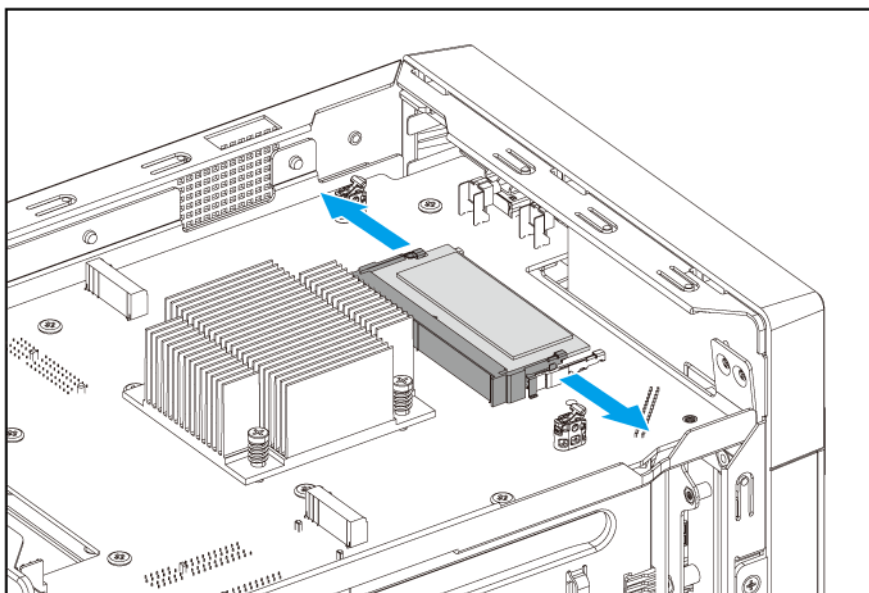
1. 关闭设备。

2. 从插座上拔下电源线。

3. 拔掉所有线缆和外接部件。
4. 取下外壳盖。
  - a. 松开螺丝。
  - b. 将盖板向后滑动。
  - c. 从设备上提起盖板。



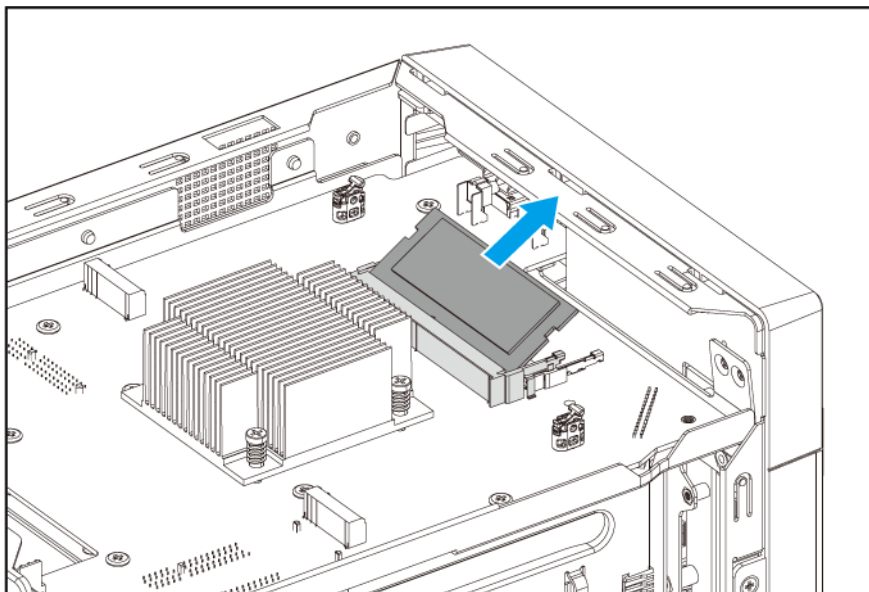
5. 取下现有模块。
  - a. 同时向外推动固定夹以释放模块。



- b. 确认模块向上倾斜并完全脱离插槽。

**警告**

如果尝试在模块尚未完全脱离时将其取出，可能会损坏模块和主板。

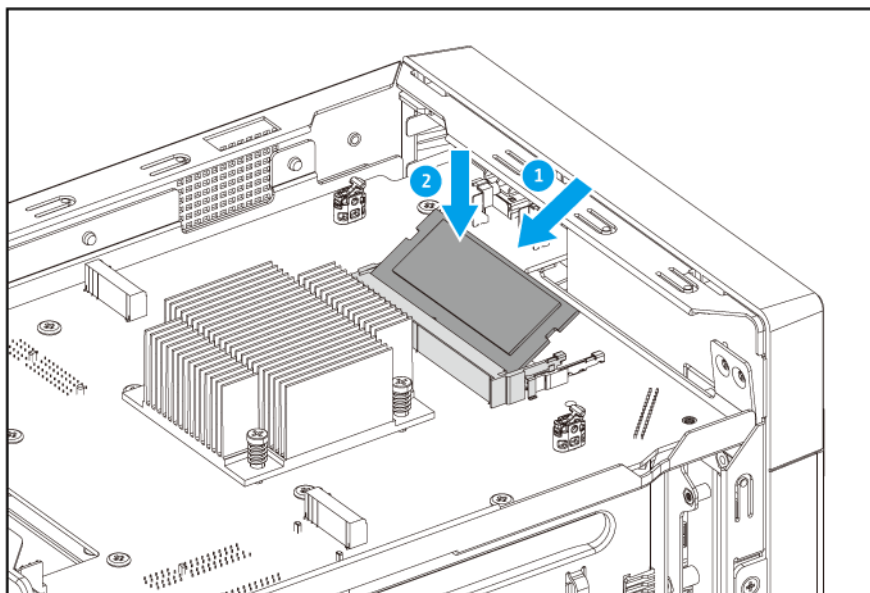


- c. 握住模块边缘。
- d. 小心将模块滑出插槽。

**警告**

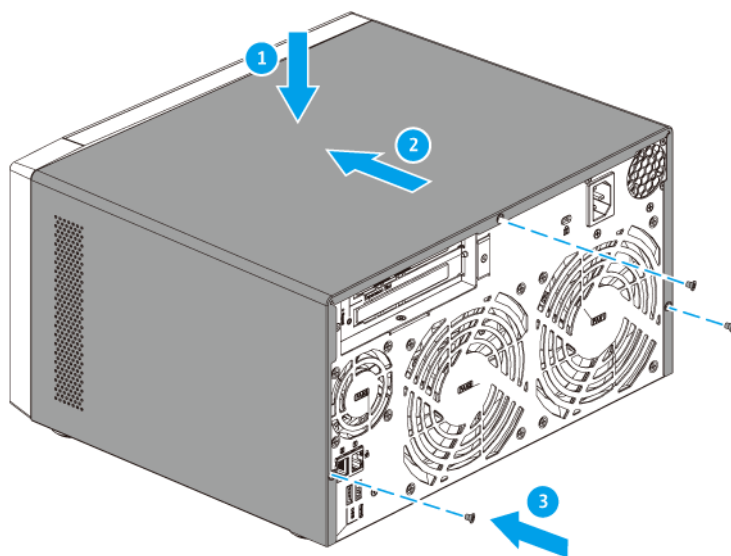
- 请勿触摸内部组件，特别是金属接头。
- 不要折弯模块。

6. 安装新模块。
  - a. 将凹口与插槽内的凸起对齐。
  - b. 将模块插入插槽中。
  - c. 确认金属接头已完全插入插槽中。
  - d. 小心地向下按压模块，直到固定夹将模块锁定到位。



## 7. 安装外壳盖。

- a. 向下滑动盖板，使其完全触及机箱。
- b. 将盖板向前滑动。
- c. 拧紧螺丝。



8. 连接所有线缆和外接部件。
9. 启动设备。
10. 确认设备能够识别该模块。
  - a. 以管理员身份登录 QTS。

b. 转到**控制台 > 系统 > 系统状态 > 硬件信息**。

c. 检查**内存总容量值**。

## 安装扩展单元

TS-x73A 支持 SAS 扩展单元、SATA JBOD 扩展单元和 USB 扩展单元。有关详细信息，请参见下表。

您可以从 QNAP 或授权经销商处购买存储扩展配件。

有关详细信息，请转到 <https://shop.qnap.com/>。

有关兼容扩展单元的列表和最大可应用扩展单元数，请转到 <http://www.qnap.com/go/compatibility-expansion>。

扩展单元型号	描述	所需配件
TL-D400S	<ul style="list-style-type: none"> <li>使用 SATA 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>1 x SFF-8088 连接器线缆</li> <li>QXP-400eS-A1164 主机总线适配器</li> </ul>
TL-D800S	<ul style="list-style-type: none"> <li>使用 SATA 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>2 x SFF-8088 连接器线缆</li> <li>QXP-800eS-A1164 主机总线适配器</li> </ul>
TL-D1600S	<ul style="list-style-type: none"> <li>使用 SATA 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>4 x SFF-8088 至 SFF-8644 连接器线缆</li> <li>QXP-1600eS 主机总线适配器</li> </ul>
TL-R400S	<ul style="list-style-type: none"> <li>使用 SATA 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>1 x SFF-8088 连接器线缆</li> <li>QXP-400eS-A1164 主机总线适配器</li> <li>RAIL-B02</li> </ul>
TL-R1200S-RP	<ul style="list-style-type: none"> <li>使用 SATA 6 Gbps (SFF-8088) 接口</li> <li>支持 SATA/HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>3 x SFF-8088 至 SFF-8644 连接器线缆</li> <li>QXP-1600eS 主机总线适配器</li> <li>RAIL-B02</li> </ul>
TL-R1620Sep-RP	<ul style="list-style-type: none"> <li>使用 SAS 12 Gbps (SFF-8644) 接口</li> <li>支持 SAS/SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>下列存储扩展卡之一： <ul style="list-style-type: none"> <li>SAS-12G2E</li> <li>QXP-820S-B3408</li> <li>QXP-1620S-B3616W</li> </ul> </li> <li>mini-SAS SFF-8644 线缆</li> <li>RAIL-A03-57</li> </ul>



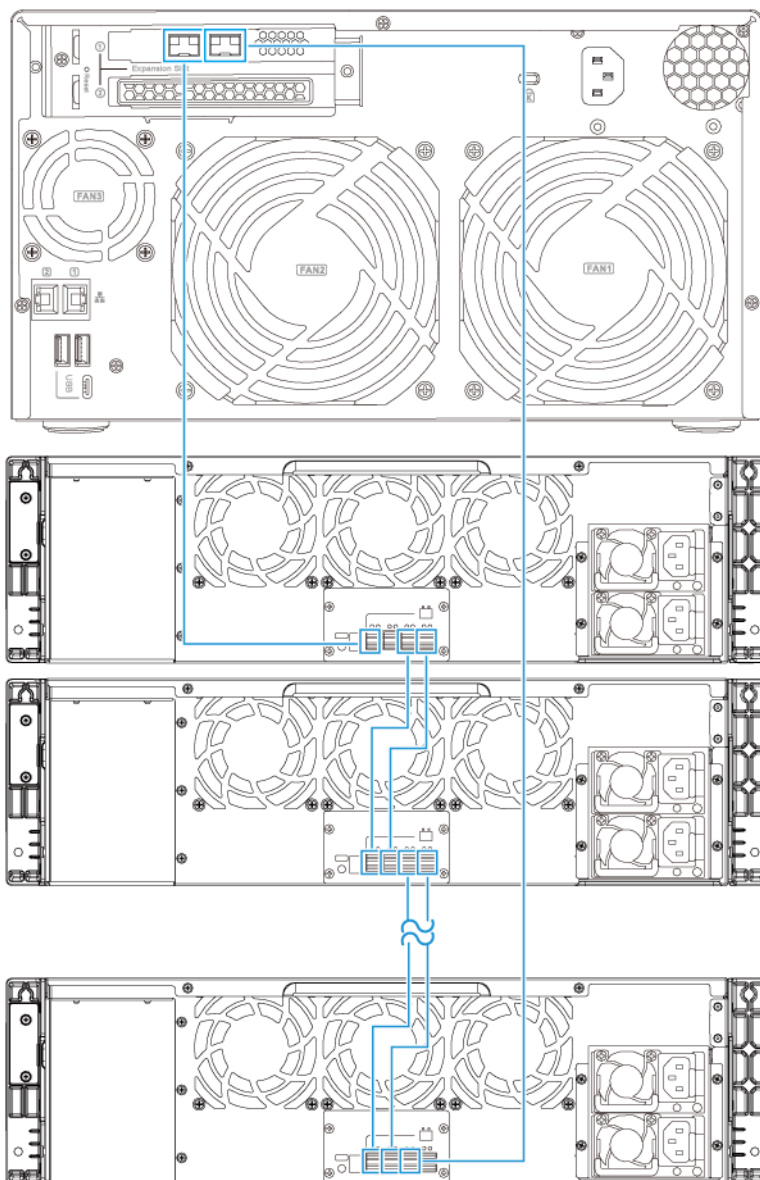
扩展单元型号	描述	所需配件
TL-R1220Sep-RP	<ul style="list-style-type: none"> <li>使用 SAS 12 Gbps (SFF-8644) 接口</li> <li>支持 SAS/SATA HDD/SSD</li> </ul>	<ul style="list-style-type: none"> <li>下列存储扩展卡之一： <ul style="list-style-type: none"> <li>SAS-12G2E</li> <li>QXP-820S-B3408</li> <li>QXP-1620S-B3616W</li> </ul> </li> <li>mini-SAS SFF-8644 线缆</li> <li>RAIL-A03-57</li> </ul>
TR-002	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 2 C 型接口</li> <li>支持 SATA 硬盘</li> </ul>	<ul style="list-style-type: none"> <li>USB 3.2 Gen 2 A 型至 C 型线缆</li> <li>USB 3.2 Gen 2 C 型至 C 型线缆</li> </ul>
TR-004	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 1 C 型接口</li> <li>支持 SATA 硬盘</li> </ul>	<ul style="list-style-type: none"> <li>USB 3.2 Gen 2 A 型至 C 型线缆</li> <li>USB 3.2 Gen 2 C 型至 C 型线缆</li> </ul>
TR-004U	<ul style="list-style-type: none"> <li>使用 USB 3.2 Gen 1 C 型接口</li> <li>支持 SATA 硬盘</li> </ul>	<ul style="list-style-type: none"> <li>USB 3.2 Gen 1 A 型至 C 型线缆</li> <li>USB 3.2 Gen 2 C 型至 C 型线缆</li> <li>RAIL-B02</li> </ul>

## 连接 SAS 扩展单元

要将设备连接到 SAS 扩展单元，必须在设备中安装存储扩展卡。

有关所需配件的详细信息，请参见[安装扩展单元](#)。

- 在 PCIe 插槽上安装存储扩展卡。  
有关详细信息，请参见[安装扩展卡](#)。
- 按以下拓扑将扩展单元连接到设备。



3. 为扩展单元接通电源。
4. 确认设备能够识别扩展单元。
  - a. 以管理员身份登录 QTS。
  - b. 转到主菜单 > 存储与快照总管 > 概述 > 系统。
  - c. 确认扩展单元已列出。

### 连接 SATA JBOD 扩展单元

要将 TS-x73A 连接到 SATA JBOD 扩展单元，必须在 NAS 中安装主机总线适配器。

有关所需配件的详细信息，请参见[安装扩展单元](#)。

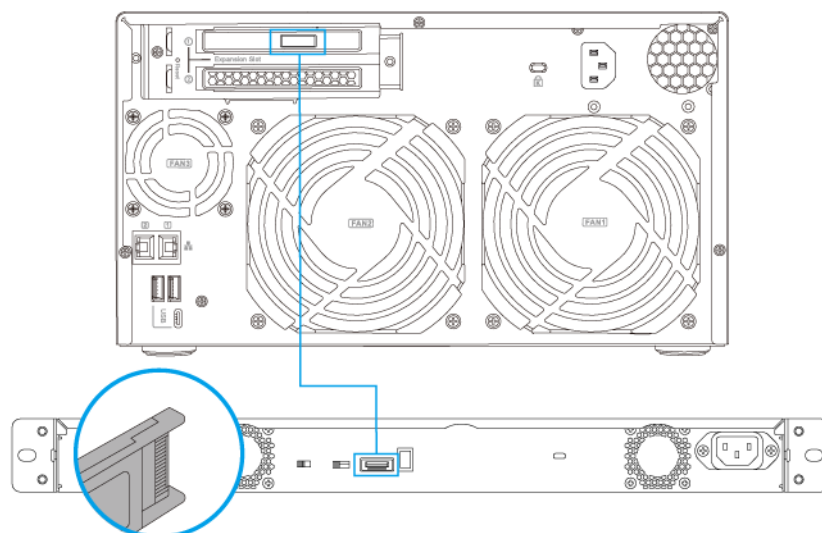
1. 关闭 NAS 电源。
2. 在 PCIe 插槽上安装主机总线适配器。  
有关详细信息，请参见[安装扩展卡](#)。



### 重要

将 SATA JBOD 设备连接到主机设备时，需要 QNAP QXP 主机总线适配器。第三方主机总线适配器与 QNAP JBOD 设备不兼容。

3. 按以下拓扑将扩展单元连接到 NAS。



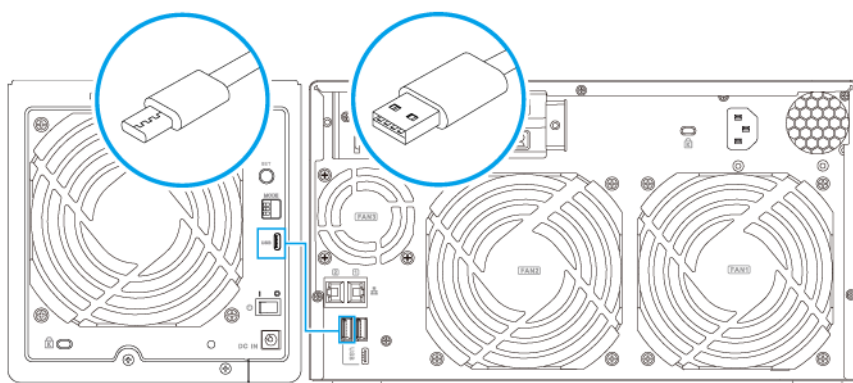
4. 启动 SATA JBOD 扩展单元电源。
5. 启动 NAS 电源。
6. 确认 NAS 能够识别扩展单元。
  - a. 以管理员身份登录 QTS 或 QuTS hero。
  - b. 转到主菜单 > 存储与快照总管 > 概述 > 系统。
  - c. 确认扩展单元已列出。

## 连接 USB 扩展单元

要将 TS-x73A 连接到 USB 扩展单元，需要 USB A 型至 USB C 型线缆或 USB C 型至 USB C 型线缆。

有关所需配件的详细信息，请参见[安装扩展单元](#)。

1. 确认 NAS 已关机。
2. 将扩展单元连接到 NAS。
  - a. 将 USB 线缆连接到 NAS 上的 USB 3.2 Gen 2 A 型端口或 USB C 型端口。



3. 为扩展单元接通电源。
4. 启动 NAS 电源。
5. 确认 NAS 能够识别扩展单元。
  - a. 以管理员身份登录 QTS。
  - b. 转到主菜单 > 存储与快照总管 > 概述 > 系统。
  - c. 确认扩展单元已列出。

## QTS 安装

TS-x73A 使用 QNAPQTS 操作系统。可以使用以下任一方法安装 QTS。

方法	描述	要求
Qfinder Pro 安装 (推荐)	<p>如果 NAS 已连接到您的局域网，可以执行以下操作：</p> <ul style="list-style-type: none"> <li>• 使用 Qfinder Pro 定位 NAS。</li> <li>• 完成“智能安装指南”向导中的步骤。</li> </ul> <p>有关详细信息，请参见<a href="#">使用 Qfinder Pro 安装 QTS</a>。</p>	<ul style="list-style-type: none"> <li>• 计算机</li> <li>• 网线</li> <li>• Qfinder Pro 安装程序</li> </ul>

方法	描述	要求
云安装	<p>如果 NAS 已连接到 Internet, 可以执行以下操作:</p> <ul style="list-style-type: none"> <li>• 扫描 NAS 上的二维码。</li> <li>• 登录您的 myQNAPcloud 帐户。</li> <li>• 使用 myQNAPcloud Link 远程访问 NAS。</li> <li>• 完成“智能安装指南”向导中的步骤。</li> </ul> <p>有关详细信息, 请参见<a href="#">使用 Cloud Key 安装 QTS</a>。</p>	<ul style="list-style-type: none"> <li>• 计算机或移动设备</li> <li>• 网线</li> <li>• myQNAPcloud 帐户</li> <li>• Cloud Key</li> </ul>

还可以安装 QNAP QuTS hero 操作系统。如果您的 NAS 已连接到 Internet, 则智能安装指南向导将显示使用表中方法安装 QuTS hero 的选项。您也可以从 [download.qnap.com](http://download.qnap.com) 下载 QuTS hero 固件。



#### 警告

QuTS hero 和 QTS 使用不同的文件系统。切换操作系统将重置 NAS 并删除所有数据。

## 使用 Qfinder Pro 安装 QTS



#### 警告

安装 QTS 将删除硬盘上的所有数据。请先备份您的数据, 然后再继续。

1. 启动 NAS 电源。
2. 将 NAS 连接到您的局域网中。
3. 在已连接到同一局域网的计算机上运行 Qfinder Pro。



#### 注

要下载 Qfinder Pro, 请转到 <https://www.qnap.com/utilities>。

4. 在列表中找到 NAS, 然后双击名称或 IP 地址。  
智能安装指南将在默认 Web 浏览器中打开。
5. 单击启动智能安装指南。  
此时会出现输入 NAS 名称和管理员密码屏幕。
6. 指定以下信息。
  - **NAS 名称:** 指定 1 至 14 个字符的名称。名称支持字母 (A 到 Z、a 到 z)、数字 (0 到 9) 和连字符 (-), 但不能以连字符结尾。
  - **密码:** 指定 1 至 64 个字符的管理员密码。密码支持所有 ASCII 字符。
7. 单击下一步。  
此时会出现设置日期和时间屏幕。
8. 指定时区、日期和时间。



#### 提示

QNAP 建议连接到 NTP 服务器, 以确保 NAS 遵循协调世界时 (UTC) 标准。

9. 单击**下一步**。  
此时会出现**配置网络设置**屏幕。
10. 选择**自动获取 IP 地址(DHCP)**。
11. 单击**下一步**。  
此时会出现**跨平台文件传输服务**屏幕。
12. 选择将用于访问 NAS 上共享文件夹的设备类型。
13. 单击**下一步**。  
此时会出现**摘要**屏幕。
14. 检查设置。
15. 单击**应用**。  
此时会出现确认消息。

**警告**

单击**确认**后，将先删除硬盘上的所有数据，然后再安装 QTS。

16. 单击**确认**。  
QTS 即安装完毕。

## 使用 Cloud Key 安装 QTS

**警告**

安装 QTS 将删除硬盘上的所有数据。请先备份您的数据，然后再继续。

1. 启动 NAS 电源。
2. 将 NAS 连接到 Internet。
3. 使用以下方法之一转到“QNAP Cloud 安装”页面：
  - 在您的计算机上，转到 <http://install.qnap.com/>。
  - 使用移动设备扫描 NAS 上的二维码。

网页中会列出本地网络上所有尚未初始化的 QNAP NAS 设备。

4. 从列表中找到您的 NAS，然后单击**初始化**。

**注**

如果未列出您的 NAS，请按网页上的说明指定 NAS 上的 Cloud Key。

安装向导将在默认 Web 浏览器中打开。

5. 创建帐户或登录 myQNAPcloud。

**注**

创建帐户后，您必须返回此页面才能完成安装。

6. 为 NAS 指定 myQNAPcloud 设备名称。

**注**

- myQNAPcloud 设备名称用于远程访问 NAS。

- 因安全原因，在您的 NAS 上初始化 myQNAPcloud Link 远程连接服务后，会将其禁用。通过 LAN 连接到 QTS，然后安装 myQNAPcloud Link 可启用此服务。

7. 单击下一步。

智能安装指南将在默认 Web 浏览器中打开。

8. 单击启动智能安装指南。

9. 指定以下信息。

- **NAS 名称：**指定 1 至 14 个字符的名称。名称支持字母（A 到 Z、a 到 z）、数字（0 到 9）和连字符（-），但不能以连字符结尾。
- **密码：**指定 1 至 64 个字符的管理员密码。密码支持所有 ASCII 字符。

10. 单击下一步。

此时会出现设置日期和时间屏幕。

11. 指定时区、日期和时间。



**提示**

QNAP 建议连接到 NTP 服务器，以确保 NAS 遵循协调世界时 (UTC) 标准。

12. 单击下一步。

此时会出现配置网络设置屏幕。

13. 选择自动获取 IP 地址(DHCP)。

14. 单击下一步。

此时会出现跨平台文件传输服务屏幕。

15. 选择将用于访问 NAS 上共享文件夹的设备类型。

16. 单击下一步。

此时会出现摘要屏幕。

17. 检查设置。

18. 单击应用。

此时会出现确认消息。



**警告**

单击确认后，将先删除硬盘上的所有数据，然后再安装 QTS。

19. 单击确认。

QTS 即安装完毕。

## 4. 基本操作

本章介绍 NAS 的基本操作。


### 电源按钮

操作	用户操作	结果
启动电源	按下此按钮一次。	设备开机。
关闭电源	按住此按钮 1.5 秒钟。	设备关机。
强制关机	按住此按钮 5 秒钟。	设备关机。



**重要**  
仅当设备无响应时才能使用此方法。

### 重置按钮

操作	用户操作	结果
基本系统重置	按住此按钮 3 秒钟。	<p>以下设置将重置为默认值：</p> <ul style="list-style-type: none"> <li>• 系统管理员密码：默认密码为第一个 MAC 地址（去掉特殊字符），以大写字母表示。例如，如果第一个 MAC 地址为 00-08-9B-F6-15-75，则管理员密码将为 00089BF61575。</li> </ul> <p> <b>提示</b> 您可以使用 Qfinder Pro 找到第一个 MAC 地址。设备上粘贴的标签也会在 MAC1 下列出此地址。</p> <ul style="list-style-type: none"> <li>• TCP/IP 配置：               <ul style="list-style-type: none"> <li>• 通过 DHCP 自动获取 IP 地址设置</li> <li>• 禁用巨型帧</li> <li>• 如果启用端口中继（仅限多局域网型号），则端口中继模式将重置为“主动备份(故障转移)”。</li> </ul> </li> <li>• 系统端口：8080（系统服务端口）</li> <li>• 安全等级：低（允许所有连接）</li> <li>• LCD 面板密码：（空白）</li> <li>• VLAN：禁用</li> </ul>
高级系统重置	按住此按钮 15 秒钟。	<p>恢复默认出厂设置。</p> <ul style="list-style-type: none"> <li>• 要在高级系统重置后检索旧数据，请在 NAS 上重新创建先前的文件夹结构。</li> </ul>



## USB 一键复制按钮


使用 USB 一键复制按钮，可以将数据备份从 USB 设备复制到 NAS，或将数据备份从 NAS 复制到 USB 设备。

此功能支持增量备份。NAS 只会复制在上次备份后修改或添加的文件。

## LED

开启设备电源后，LED 指示灯会指示系统状态和相关信息。以下 LED 信息仅适用于硬盘已正确安装并且设备已连接到网络或主机的情况。

有关 LED 位置的详细信息，请参见[组件](#)。

LED	状态	描述
系统状态	红绿交替闪烁, 间隔 0.5 秒	<ul style="list-style-type: none"> <li>• 硬盘正在格式化。</li> <li>• 设备正在初始化。</li> <li>• 操作系统正在更新。</li> <li>• RAID 正在重建。</li> <li>• 正在进行在线 RAID 容量扩展。</li> <li>• 正在进行在线 RAID 级别迁移。</li> <li>• 固件正在更新。</li> </ul> <p> <b>重要</b> 更新固件时, 请勿拔下电源线或 USB 缆线, 也不要强行退出应用程序。</p>
	红色	<ul style="list-style-type: none"> <li>• 硬盘无效。</li> <li>• 磁盘卷的容量已满。</li> <li>• 磁盘卷的容量即将被占满。</li> <li>• 系统风扇故障。</li> <li>• 访问 (读/写) 数据时出错。</li> <li>• 在硬盘上检测到坏扇区。</li> <li>• 设备处于降级只读模式 (RAID 5 或 RAID 6 中的两个成员硬盘出现故障, 但仍可读取数据)。</li> <li>• 硬件自检发生错误。</li> </ul>
	闪烁红色, 间隔 0.5 秒	设备处于降级模式 (RAID 1、RAID 5 或 RAID 6 中的一个成员硬盘出现故障)。
	绿色	设备已就绪。
	闪烁绿色, 间隔 0.5 秒	<ul style="list-style-type: none"> <li>• 设备未配置。</li> <li>• 硬盘未格式化。</li> </ul>
	熄灭	<ul style="list-style-type: none"> <li>• 所有硬盘都处于待机模式。</li> <li>• 设备已关机。</li> </ul>
LAN	橙色	网络连接正在运行。
	闪烁橙色	正在从网络访问设备。
	熄灭	设备未连接至网络。
云端硬盘	闪烁红色	正在访问数据, 但在此过程中发生读/写错误。
	红色	发生硬盘读/写错误。
	闪烁绿色	正在访问数据。
	绿色	硬盘就绪。
	熄灭	未检测到硬盘。

LED	状态	描述
2.5 Gb 以太网速度	绿色	网络连接以 2.5 Gbps 的速度运行。
	橙色	网络连接以 1 Gbps 或 100 Mbps 的速度运行。
	熄灭	<ul style="list-style-type: none"> <li>• 网络连接以 100 Mbps 的速度运行。</li> <li>• 没有网络连接。</li> </ul>
2.5 Gb 以太网活动	橙色	网络连接已建立。
	闪烁橙色	正在从网络访问设备。
	熄灭	没有网络连接。
USB	蓝色	检测到一个 USB 设备连接到 USB 一键复制端口。
	熄灭	未检测到 USB 扩展单元。
USB 一键复制	闪烁蓝色，间隔 0.5 秒	<ul style="list-style-type: none"> <li>• 检测到一个 USB 设备连接到 USB 一键复制端口。</li> <li>• 正在从设备移除一个连接到前 USB 端口的 USB 设备。</li> <li>• 正在访问一个连接到前 USB 端口的 USB 设备。</li> </ul>
	蓝色	在前 USB 端口中检测到 USB 设备。
	熄灭	未检测到 USB 设备。

## 警告音

时长	频率	描述
短提示音 (0.5 秒)	1	<ul style="list-style-type: none"> <li>• NAS 正在启动。</li> <li>• 按下重置按钮 3 秒钟后，NAS 将重置配置。</li> <li>• 按下重置按钮 10 秒钟后，NAS 将重置配置并重新启动。</li> <li>• 操作系统已更新。</li> <li>• 设备正在启动 USB 一键复制。</li> </ul>
	3	<ul style="list-style-type: none"> <li>• 无法检测到已安装的磁盘。</li> </ul>

时长	频率	描述
长提示音 (1.5 秒)	3 (每 5 分钟)	<ul style="list-style-type: none"> <li>• 电源发生错误。</li> <li>• 系统风扇故障。</li> <li>• 风扇模块已移除。</li> <li>• 无法将 NAS 数据复制到连接到前 USB 端口的外部存储设备。</li> </ul>
	2	<ul style="list-style-type: none"> <li>• 存储池的容量即将被占满。</li> <li>• 存储池的容量已满。</li> <li>• 发生存储池状态错误。</li> <li>• 磁盘卷的容量即将被占满。</li> <li>• 磁盘卷的容量已满。</li> <li>• 正在移除 USB 设备 (USB 一键复制按钮)。</li> <li>• 发生卷状态错误。</li> <li>• 插入或抽出硬盘。</li> <li>• iSCSI 的容量即将被占满。</li> </ul>
	1	<ul style="list-style-type: none"> <li>• NAS 已通过强制关闭关机 (硬件关闭)。</li> <li>• NAS 已成功开机并准备就绪。</li> </ul>

## 5. 故障排除

本章介绍基本故障排除信息。

### 强制 Qfinder Pro 或 myQNAPcloud 定位 NAS

如果在 QTS 安装过程中 Qfinder Pro 或 myQNAPcloud 无法定位 NAS，则硬盘或数据可能有故障。

1. 关闭 NAS 电源。
2. 取下所有硬盘。
3. 启动 NAS 电源。
4. 使用 Qfinder Pro 或 myQNAPcloud 定位 NAS。
5. 重新插入硬盘。
6. 继续安装 QTS。

### 热插拔故障硬盘

在以下情况下，NAS 支持热插拔硬盘：

RAID 类型	磁盘数量	情形
RAID 1	2	一个成员硬盘有故障
RAID 5	≥ 3	一个成员硬盘有故障
RAID 6	≥ 4	一个或两个成员硬盘有故障
RAID 10	≥ 4（必须为偶数）	处于两个不同对中的一个或两个成员硬盘有故障。
RAID 50	≥ 6	每个子组的一个磁盘有故障。
RAID 60	≥ 8	每个子组的两个磁盘有故障。

1. 登录 QTS。
2. 转到主菜单 > 存储与快照总管 > 存储空间 > 磁盘/VJBOD。
3. 找到发生故障的硬盘。
4. 准备一个与故障硬盘具有相同或更大容量的新硬盘。
5. 从设备中取下故障硬盘。
6. 等待 20 秒或设备发出两声提示音。
7. 从硬盘托盘中取下故障硬盘。
8. 将新硬盘插入硬盘托盘中。
9. 安装新硬盘。  
此时 NAS 会发出两声提示音。
10. 转到主菜单 > 存储与快照总管 > 存储空间。
11. 找到包含新硬盘的卷，然后确认状态为正在重建。

## 恢复被意外移除的正常硬盘

NAS 支持独有的 RAID 恢复技术，可以从意外断开或移除的硬盘中恢复发生故障的 RAID 磁盘卷。用户可以从降级模式恢复非活动 RAID 1、RAID 5、RAID 6、RAID 10、RAID 50 或 RAID 60 卷。

磁盘卷	RAID 恢复支持	磁盘数量	被移除硬盘的最大数量
单盘	否	1	不适用
JBOD	是	≥ 2	不适用
RAID 0	是	≥ 2	不适用
RAID 1	是	2	1
RAID 5	是	≥ 3	1
RAID 6	是	≥ 4	2
RAID 10	否	≥ 4（必须为偶数）	处于两个不同对中的一个或两个成员硬盘有故障。
RAID 50	是	≥ 6	每个子组的一个磁盘有故障。
RAID 60	是	≥ 8	每个子组的两个磁盘有故障。

## 支持和其他资源

QNAP 提供了以下资源：

资源	URL
文档	<a href="https://download.qnap.com">https://download.qnap.com</a>
兼容性列表	<a href="https://www.qnap.com/compatibility">https://www.qnap.com/compatibility</a>
NAS 迁移兼容性	<a href="https://www.qnap.com/en/nas-migration">https://www.qnap.com/en/nas-migration</a>
扩展单元兼容性	<a href="http://www.qnap.com/go/compatibility-expansion">http://www.qnap.com/go/compatibility-expansion</a>
服务门户	<a href="https://service.qnap.com">https://service.qnap.com</a>
产品支持状态	<a href="https://www.qnap.com/product/eol.php">https://www.qnap.com/product/eol.php</a>
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社区论坛	<a href="https://forum.qnap.com">https://forum.qnap.com</a>
QNAP 配件商店	<a href="https://shop.qnap.com">https://shop.qnap.com</a>

## 6. 术语表

### Cloud Key

分配给每个 NAS 设备的唯一 8 位数代码

### myQNAPcloud Link

可用于通过 Internet 访问 NAS，而且不必配置复杂的端口转发设置

### myQNAPcloud

提供各种远程访问服务，如 DDNS 和 myQNAPcloud Link

### QNAP ID

用户帐户，可用于使用 myQNAPcloud 远程访问和其他 QNAP 服务

### Qfinder Pro

一种 QNAP 实用工具，可用于查找和访问局域网中的 QNAP NAS 设备

### QTS

QNAP NAS 操作系统

### QuTS hero

采用 ZFS 文件系统的 QNAP NAS 操作系统

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Version 3, 29 June 2007

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2. 本设备必须承受受到的干扰，包括可能导致运行异常的干扰。



#### 注

经测试，本设备符合 FCC 规则第 15 部分中针对 B 类数字设备的限制标准。这些限制标准旨在提供合理的保护，以防止在住宅区安装设备时产生有害干扰。本设备会产生、使用并可发出射频能量，如果不按说明安装和使用，可能会对无线电通信产生有害干扰。但是，并不保证在特定安装中不会产生此类干扰。如果本设备确实对收音机或电视机接收造成有害干扰（可通过打开和关闭本设备来判定），建议用户尝试采取下列一项或多项措施来消除干扰：

- 改变接收天线的方向或位置。
- 增加本设备与接收设备之间的间距。
- 将本设备与接收设备分别接入不同回路的电源插座。
- 请咨询经销商或经验丰富的收音机/电视机技术人员以寻求帮助。



#### 重要

若未经 QNAP Systems, Inc. 批准对本设备进行改动，可能会导致用户失去 FCC 授予的操作本设备的资格。

## VCCI 公告



VCCI - B



## BSMI 公告



## SJ/T 11364-2006



本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	0	0	0	0	0	0
显示	0	0	0	0	0	0
印刷电路板	0	0	0	0	0	0
金属螺帽	0	0	0	0	0	0
电缆组装	0	0	0	0	0	0
风扇组装	0	0	0	0	0	0
电力供应组装	0	0	0	0	0	0
电池	0	0	0	0	0	0

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。  
 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。